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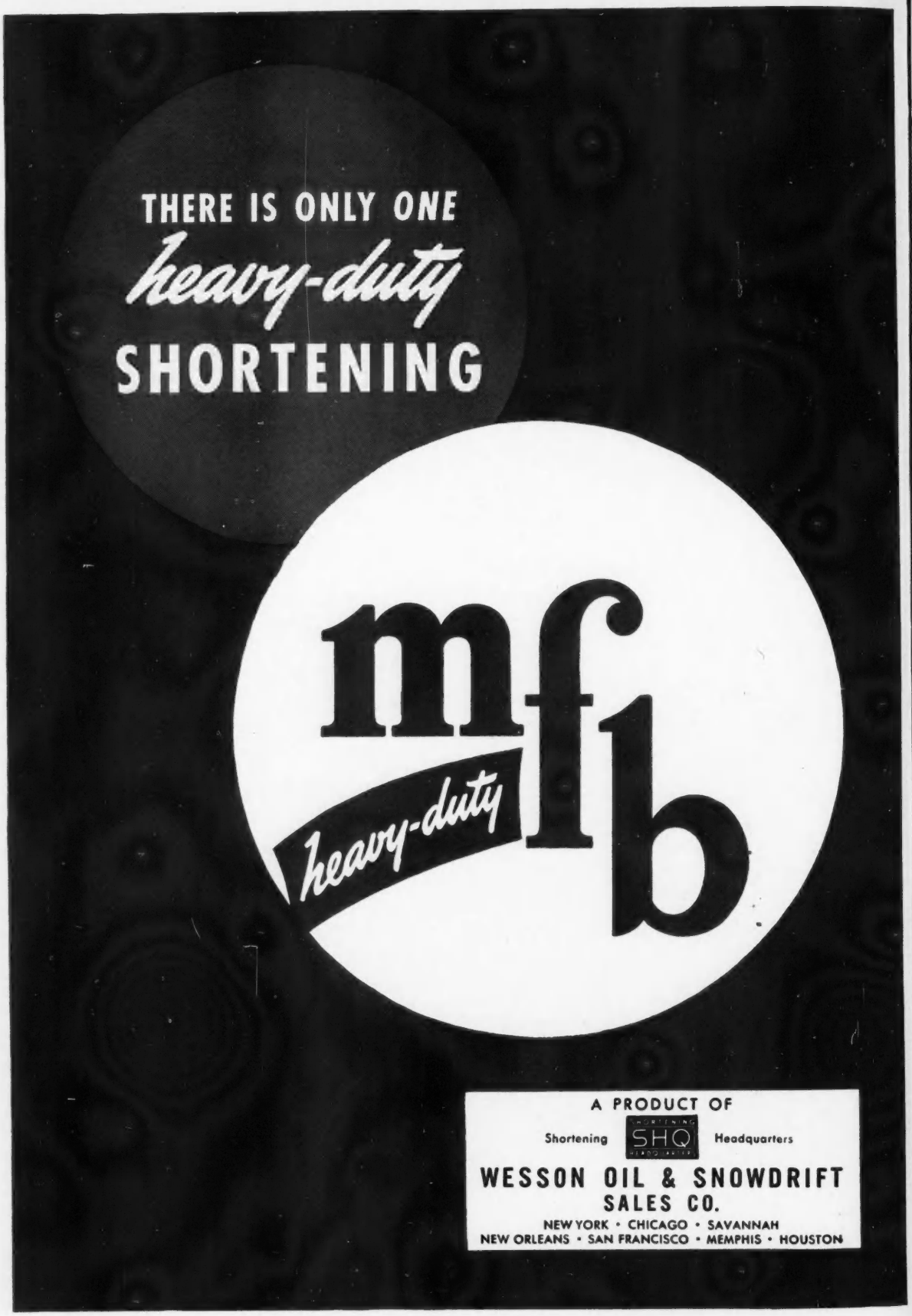
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Diet and Tumor Development[1]

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THE QUESTION of what a sick person should eat has come up in connection with practically every physical disorder known to man. Cancer is no exception; menus recommended for cancer patients have actually been published. This suggests a hope either that the course of the disease might be altered favorably by diet, or conversely that unfavorable aspects of the disease might be minimized. Adverse effects of diet are implicit in the charges that cancer of the stomach (1, 2) or of the liver (3) may be due in part to the consumption of the wrong kinds of food. Experiments with small laboratory animals indicate that the growth of tumors may be affected to some extent by the nature of the diet, and further that diet exerts an even greater effect upon the reactions by which tumors arise than upon the growth of tumors already formed. The details are available in several fairly recent reviews (4–10).

PRODUCTION OF TUMORS IN LABORATORY ANIMALS

The species used in nutritional experiments with tumors are usually rats or mice, with an occasional study made on rabbits or guinea pigs. Rats and mice develop tumors rather easily, and they are also the species whose nutritive requirements are known most completely. Tumors in mice can be produced in a number of ways.

Hydrocarbons as Carcinogens

The animals can be exposed to carcinogenic hydrocarbons (11, 12), such as methyl cholanthrene, benzpyrene, or dibenzanthracene. If the hydrocarbon is injected subcutaneously in oil, a tumor develops at the site of injection. If the hydrocarbon is dissolved in acetone or benzene and painted on the skin with a small brush, epithelial tumors develop. Depending upon the hydrocarbon, the dosage, and the strain of mouse, either method yields tumors in four to twelve months. A subcutaneous injection involves less work, because it needs to be done only once, whereas the painting technique ordinarily is repeated several times a week for two months or more. However, tumors due to painting are somewhat more sensitive to diet than those due to injection; and since they develop on the surface of the skin, they can also be observed more easily. Tumors due to hydrocarbons are analogous to the historic types of human cancer found in chimney sweeps or other workmen exposed to coal tar. The purified hydrocarbons now used in the laboratory were either originally extracted from coal tar or they are synthetic substances related to the coal tar derivatives.

Tumors Induced by Ultraviolet Light

Another technique for the production of tumors involves the exposure of mice to ultraviolet light (13, 14). This also is fairly laborious. The animals are placed in suitable frames to keep them from shielding themselves from the light and are exposed to the light from a mercury vapor lamp for 15 to 60 min. daily for four to eight months depending upon the intensity of the light. Tumors develop on those parts of the body not protected by hair. The ears are particularly susceptible, but tumors on the tail or the eyelid have also been produced by this means. White mice are more susceptible than colored ones, and in general this type of tumor is analogous to skin cancer in men exposed to excessive amounts of sunlight. The development of these tumors, in mice at least, is known to depend upon the amount and composition of the food consumed.

Genetic Mammary Tumors

Still other types of tumors which may be produced in the mouse are the so-called spontaneous tumors. Many pure-bred strains of mice possess genetic

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characteristics that favor the development of tumors in specific parts of the body, e.g., mammary tumors may develop in 90 per cent of all females nine to twenty-four months of age. Other strains are resistant to mammary tumors, but develop spontaneous tumors of the lung or liver; still others develop leukemia. Taken collectively, the spontaneous tumors of mice present the closest analogy to cancer in man, since they develop in comparable parts of the body, without any apparent external exciting agent, and most of them develop relatively late in life.

One aspect of the spontaneous mammary mouse tumors deserves comment. It is the remarkable role of mouse milk in the transmission of the neoplasm (9, 10, 15). Although these tumors develop late in life, the factor responsible is acquired during the first few days after parturition. If the new born from a high cancer strain are suckled by a female from a resistant strain, they grow up relatively resistant to this type of cancer. On the other hand, if new-born mice from a "genetically-resistant" strain are allowed to suckle from a "high-cancer" female, the young develop a high incidence of mammary tumors later in life. Extensive research at the University of Minnesota, Columbia University, Bethesda, and elsewhere have led to the conclusion that a chemical substance is involved, that the factor may be concentrated from milk in the nucleoprotein fraction, and that in all probability it is virus in nature. Apparently the "mammary tumor agent" must be absorbed intact for cancer to develop ultimately, and such absorption from the digestive tract is only possible during the first few days after birth. It should not be inferred from these experiments that there is any particular danger involved in using cow's milk for human consumption. The experiments do, however, furnish grounds for speculating on the possible presence of a similar agent in certain samples of human milk.

Dye-Produced Tumors

Still another method for the production of tumors involves the feeding of azo dyes to rats. Several azo dyes are now available that induce tumors of the liver in rats fed suitable amounts (usually about $\frac{1}{20}$ of 1 per cent) in the diet. These dyes are derivatives of substances formerly used to promote wound healing, and one of the dyes, paradimethylaminoazobenzene, has even been used in the past to color food stuffs[2]! Of the various species of experimental animals available, the rat responds most readily to these substances. Of greatest interest to nutritionists is the fact that the rate of formation of these tumors depends directly upon the composition of the basal diet. It usually takes four to eight months to produce tumors by this means.

[2] As far as is known, however, the yellow dyes now permitted in foods are not carcinogenic (16, 17).

All of the tumors mentioned thus far, whether due to hydrocarbons, ultraviolet light, virus, azo dyes, or the unknown factors responsible for spontaneous tumors have certain characteristics in common. Once formed, they continue to grow unchecked without the application of further carcinogen. Many metastasize, and most can be transplanted successfully into other normal animals of the same strain. Indeed, the quickest way to obtain tumor tissue for experimental study is to implant a small piece of pre-existing tumor into a healthy animal. Such tumors, however, are essentially foreign to the host, and studies made on implants apply only to the growth of pre-existing tumors; they have little bearing on the more basic problem of how tumors form in the first place.

SOME GENERAL DIETARY ASPECTS OF THE PROBLEM

In view of the many different types of tumors available for study and the many ingredients of diets that might be varied either singly or in com bination, the task of investigating the role of diet in tumor development might easily become a formidable one. In general, the growth of the tumor cell involves the same nutrient principles required for the growth of normal tissue. A severe dietary restriction, such as a total absence of protein or of thiamine, may seriously interfere with the growth and development of the tumor, but it seldom destroys it completely. The tumor derives its nourishment directly from the body fluids of the host and only indirectly from the diet. Even when the diet is totally devoid of something as essential as protein or thiamine, the body fluids still contain measurable amounts of these essentials, derived, if necessary, from the breakdown of the normal tissues of the host. Thus, the tumor is still able to abstract nutrients from the body fluids, and the net result is that more damage may be inflicted upon the host than upon the tumor.

On the other hand, certain milder forms of restriction, such as a 30 per cent decrease in caloric intake, have been observed to retard the growth of tumors, or to stop it entirely, without visible damage to the host. Unfortunately, however, when the usual amounts of food are again ingested, the tumor resumes its characteristic rate of growth.

Investigators generally distinguish between factors that are concerned with the formation of the tumor and those that affect the growth of existing tumors. In recent years most dietary studies have dealt with the former aspect of the problem. The main reason for this choice is that the role of diet appears to be much more decisive in the critical stages during which the tumor arises, than in the later stages when the full blown tumor merely increases in size. In fact, for several types of tumors, the amount and composition of the diet determine whether a tumor will or will not arise. Thus dietary studies might

be expected to contribute to basic information on the cause of cancer. The role of the nutrients in tumor development may be summed up in the statement that most tumors appear to be associated with nutritional abundance, while a few special types of tumors are associated with specific nutritional deficiencies. The present discussion deals with the problem from the viewpoint of the individual nutrients rather than that of the various tumor-types.

NUTRIENTS THAT FAVOR TUMOR FORMATION

Calories

Most tumors grow faster in animals that are well-fed than in those whose caloric intake has been restricted by 30 per cent, and some types fail to grow at all in restricted animals (18, 19). The rate at which tumors develop under the influence of carcinogenic agents likewise varies directly with increasing caloric intake. The types studied include sarcomas due to the subcutaneous injection of benzpyrene into mice (20, 21), carcinomas due to the application of hydrocarbons to the skin (20–22), epithelial tumors due to ultraviolet light (23), and spontaneous tumors of the lungs or mammary glands in the appropriate strains of mice (20, 21, 24). In a typical experiment, the full-fed mice grew to weights of 28 to 40 gm., whereas the restricted mice lost weight for a while but stabilized it at 18 to 20 gm. The underfed mice remained sleek and active and lived longer than the controls. The method of restricting calories appears to be less important than the degree of caloric restriction. A similar effect on tumor incidence was noted whether reduced amounts of a nutritionally complete diet were fed, or whether two diets were compounded so that both groups of mice received equal amounts of protein, salts, and vitamins daily with only the fat and carbohydrate being varied.

No completely satisfactory explanation for the effects of caloric restriction is available. The high growth rate and glycolytic capacity of tumor tissue suggests a relatively great need for energy (calories) by the tumor tissue, and the fact that tumors usually are not supplied with a direct and efficient blood supply makes it possible for the more strategically located normal cells to remove most of the available nutrients from the blood and intercellular fluids before the tumor has an opportunity to do so. In this connection, it is of interest that the only common type of laboratory tumor that appears to be insensitive to caloric restriction is the hepatic tumor, which has an easy access to nutrients even when the supply to the entire animal is low.

Quite another explanation suggested for the poor development of tumors in underfed animals involves an abnormal production of adrenal hormones during partial starvation. But whatever the explanation, it is clear that the effect of calories *per se* may complicate the study of any other nutrient, since a retarded development of tumors on a deficient diet, e.g., in thiamine, may actually be due to a caloric restriction imposed indirectly. Morris (25) has shown that diets deficient in thiamine, pantothenic acid, or riboflavin depressed tumor growth in mice, but that much of this depression was also observed in control mice receiving the respective vitamins but restricted to the amounts of food consumed by the deficient mice.

A relationship between human cancer and a high caloric intake is suggested by certain insurance statistics assembled by Tannenbaum (26). The proportion of persons who died from cancer was greatest among those who were classified as overweight at the time their insurance policies were issued; persons of average weight showed an intermediate mortality due to cancer, while the proportion of cancer deaths was least in the underweight groups. These undesirable effects of calories both in animals and men recall the results of McCay and associates (27, 28) who found that underfed rats not only live longer than those fed *ad libitum*, but that they retain the characteristics of youth for much longer periods of time.

Fat

Certain types of induced tumors appear more rapidly and in greater number in mice fed diets high in fat than when ordinary rations are employed. An early example of this phenomenon was the observation that skin tumors due to coal tar appeared faster when egg yolk or butter fat was fed. Similar results have been obtained with ear tumors due to ultraviolet light (29), or skin tumors due to the local application of benzpyrene, methyl cholanthrene, or dibenzanthracene (30). Spontaneous mammary tumors in dba mice likewise develop fastest on diets high in fat (31). The nature of the fat appears to be relatively unimportant, increased tumor incidences having been observed with lard, butter fat, wheat germ oil, coconut oil, or hydrogenated vegetable oil (32). The effect appears to reside in the fatty acid fraction, as was demonstrated by feeding reconstituted glycerides from the fatty acids of a vegetable shortening after the removal of the unsaponifiable matter (33). Ethyl laurate proved to be active while glycerol and the unsaponifiable fraction of fat were inactive. Not all types of tumors, however, respond to high-fat diets. The insensitive types include sarcomas due to the subcutaneous injection of the various hydrocarbons (34), lung tumors due to hydrocarbons (31), or liver tumors in mice fed aminoazotoluene (34).

The role of fat in accelerating the development of skin tumors appears to involve at least two mechanisms, a local one and a systemic one. Mice fed a high-fat diet have a greasy fur, which probably

promotes a more efficient penetration of the carcinogen into the skin, for the local application of oil onto the skin accelerates tumor formation without any change in diet (35). However, the degree of acceleration is less than when high-fat diets are fed. It is possible largely to prevent the local greasiness due to high-fat diets by several modifications in feeding technique: special feeders (33) and/or moistened pellets (31) have been used to minimize contact between the diet and the fur; special absorbents have been added to the ration (23); or the fat has been emulsified in the drinking water (33). These techniques diminish the total effect of the high-fat diet somewhat, but the mice fed diets high in fat still develop tumors faster than those on low-fat diets.

The systemic effect of fat is partly caloric in nature, for mice painted with methyl cholanthrene voluntarily consume 12 to 30 per cent more calories when fed a high-fat diet than when fed one low in fat. When the caloric intakes were equalized, the rates of tumor formation were also more nearly equal, with, however, a residual specific effect of fat still remaining that could not be ascribed either to local greasiness or to caloric intake. Such an effect of fat is apparently also operative in rats developing liver tumors due to paradimethylaminoazobenzene. Liver tumors develop faster when the diet contains 5 per cent of corn oil than when no oil is fed, and an increase in the percentage of the oil to 20 per cent markedly increased the rate of tumor formation (36). These effects could not be attributed to differences in caloric intake.

Incidentally, the nature of the fat appears to be quite as important in the development of hepatic tumors due to azo dyes (37, 38) as the amount of fat in the diet. Tumors develop less rapidly in rats fed olive oil than in those fed corn oil, while the feeding of hydrogenated coconut oil markedly retards tumor formation. The effects were not altered by the administration of α-tocopherol or of linoleic acid in amounts necessary to prevent skin lesions. Differences in observed rates of tumor formation have also been ascribed to differences between vegetable shortening, lard, and butterfat (39).

Certain B Vitamins

A striking illustration of the fact that moderately well-fed rats develop tumors faster than poorly nourished ones was encountered in an attempt to produce liver tumors in rats fed a synthetic diet which contained only the minimal concentrations of thiamine, riboflavin, pyridoxine, and pantothenic acid reported to be needed for the growth of young rats. Adult rats fed this diet plus paradimethylaminoazobenzene rapidly lost weight, many died within four months, and none of the survivors had liver tumors after six months (40). However, when the levels of the vitamins were doubled, the general condition of the animals was greatly improved, and hepatic tumors developed in 66 per cent of the animals at six months.

That specific vitamins might favor tumor formation is suggested by reports that biotin hastens the formation of liver tumors in rats receiving amounts of riboflavin that would otherwise be protective (41), and that tumor formation is retarded by diets low in pyridoxine (40). The effects of these vitamins, however, are not as consistent as those due to calories, fat, or riboflavin (see below), and while partial confirmation of the original claims has been made (42–45), contradictory observations have also been recorded (43, 46, 47). The subject is worth further study.

Cystine

While a general effect of protein on tumor formation has occasionally been postulated (48), more experimental effort has probably been devoted to cystine than to any specific protein or other amino acid. Cystine seems to be required for the optimal development of tumors of quite diverse origins, while the combination of cystine and choline is reported to suppress tumor formation due to paradimethylaminoazobenzene in rats fed high-fat diets (49). Most of the available information on cystine comes from the laboratory of White and his associates. On diets high in fat and low in protein, cystine appears to act both as a detoxifying agent and as a pro-carcinogenic factor. Rats or mice fed levels of protein minimal for growth fail to grow when the diet contains a carcinogenic hydrocarbon (50) or azo dye (51), but the further addition of 0.5 per cent of cystine restores growth even in the presence of the carcinogen. Foreign substances of the aromatic type or their degradation products often are excreted in combination with a cystine residue; hence a diet high in cystine might be expected to aid in the more rapid elimination of the carcinogens. Nevertheless, supplements of cystine definitely promote the formation of experimental tumors in rats and mice fed diets high in fat and low in protein. Types of tumors studied include leukemia in dba mice exposed to methyl cholanthrene (52), spontaneous mammary tumors in C_3H mice (53), and hepatic tumors in rats fed paradimethylaminoazobenzene (54, 55). The response of the C_3H mice is fairly typical. No mammary tumors developed in any of forty-five mice fed the low-cystine diet after even twenty-two months, whereas litter mates fed additional cystine showed a tumor incidence of 97 per cent after only nine months. This latter is also the incidence in mice of this strain fed commercial dog biscuit. Since no carcinogen was used in these experiments, the results were uncomplicated by reactions involved in detoxification.

The mice on low-cystine diets averaged only 12.4 gm. in weight at six months as contrasted with

25.3 gm. for those fed 0.5 per cent of cystine, and the consumption of food paralleled the differences in weight. One explanation offered for the role of cystine in tumor formation is that the deficient diet caused abnormalities in the glands of internal secretion, resulting in anestrus and failure of mammary tissue to develop. When mice on the deficient diet were treated with stilbesterol, the incidence of mammary tumors rose to 44 per cent (56). This would suggest that the mode of action of the cystine was only indirect as far as the tumors were concerned.

The effect of cystine, however, appears to be rather specific; it has not been duplicated with other amino acids. Dba mice exposed to methyl cholanthrene and fed diets low in tryptophane or lysine developed leukemia at the same rate as mice on complete diets, yet they grew no better than mice on the low-cystine diet (57, 58).

DIETARY DEFICIENCIES THAT FAVOR TUMOR FORMATION

Multiple Deficiencies in Man

Liver tumors in man are relatively rare in the Western world (59); a typical survey in New York City indicated that primary cancer of the liver was found in only 0.17 per cent of all cancer cases examined (60). On the other hand, there is a wide area of the world in which liver cancer accounts for a major proportion of all cancer cases. The area of high incidence includes most of Africa and much of southeastern Asia, including China, Japan, the Philippines, Java, and Sumatra (59)—areas in which the average diet is quite poor according to Western standards. In Japan, liver cancer is third in frequency of cancer types; in the Asiatic areas cited, roughly 5 to 10 per cent of all cancers are primary tumors of the liver. The incidence of liver disease among African natives is amazingly high. Cirrhosis of the liver has been found in four out of five autopsies performed on male Bantus at the Johannesburg General Hospital (3, 59), while 90.5 per cent of all cancers among native miners at the Witwatersrand gold mines is liver cancer. Data on the Bantu in other parts of Africa indicate that 37.4 per cent of all tumors found are cancer of the liver. As Kennaway (61) has stated, "If this proportion of primary cancer of the liver occurred in any large white population, the disease would be held to constitute a major problem of cancer research; as it is, the subject seems to have attracted little attention."

Possible explanations for this high incidence of liver cancer include genetic susceptibility, environment, liver flukes, alcohol, and poor diet. Genetics does not appear to be a major factor. The incidence of liver cancer among Negroes in the United States does not differ appreciably from that of American whites. Environment does not seem to be a factor, for Europeans in South Africa have a very low incidence of liver cancer. Liver flukes are said to be more common in Egypt than in South Africa, yet the incidence of liver tumors is much higher in South Africa. Incidentally, liver cancer is less frequent among Americans of Japanese ancestry than it is in Japan proper.

Several facts point to the importance of the diet. The South African natives are extremely poor, and their diet consists largely of a thick cornmeal mush ("mealie meal") plus small amounts of fermented milk. Meat is eaten only rarely. The deficiencies of this diet appear to be multiple, involving protein, specific amino acids, vitamins, and minerals. Its relation to cirrhosis was demonstrated by Gilbert and Gillman (3) who fed a mixture of "corn pap" and sour milk to 125 weanling Lister rats. Various abnormalities developed as the animals grew older: suboptimal growth, loss of hair, incrusted whiskers, and dental lesions. Significantly, there were changes in several of the internal organs, and the liver was not normal in any of the rats. Liver changes ranged from marked fatty degeneration to a multilobular cirrhosis, while frank cirrhosis occurred in 20 per cent of the rats. The similarity between these abnormalities and those found in the Bantus on similar diets was too obvious to be missed.

Cirrhotic changes have frequently been observed to precede the development of liver cancer in experimental animals, whether the agents responsible were selenium (62), CCl_4 (63, 64), the various azo dyes (65, 66), or diets low in methyl groups (67, 68). Some degree of cirrhosis has been found in the livers of all Bantus with liver cancer. Thus it would appear that the multiple deficiencies of the Bantu diet that give rise to hepatic cirrhosis are somehow related to the high incidence of liver tumors observed.

Choline Deficiency in Rats

Most laboratory rats are capable of synthesizing choline in sufficient amounts to avoid severe deficiency symptoms except for a relatively short period early in life. However, a special strain of rats bred at the Alabama Experiment Station has a high requirement for choline throughout its life span, and in the absence of the vitamin, severe fatty livers and enlarged hemorrhagic kidneys develop quickly, along with a loss in weight and a general unthrifty appearance. One of the most effective diets for producing these symptoms consists of alcohol-extracted peanut meal, alcohol-extracted casein, sucrose, lard, salt, and a mixture of vitamins (68). Other diets that have been used contain corn grits supplemented with casein, cystine, salt, and vitamins (69). A study of the chronic effects of choline deficiency in the Alabama-bred rats was possible only by the periodic administration of choline whenever weight loss was severe or when the kidneys became palpably enlarged. Under these conditions, fifty of sixty-nine

rats lived for eight months or more, and all developed cirrhosis of the liver, many with a characteristic gross "hobnail" appearance. Adenocarcinomas of the liver were found in fifteen of the fifty choline-deficient rats after eight to eighteen months. In addition, abnormal proliferation was found in other organs, including the lungs, bronchi, and peritoneum. Nineteen litter-mate control rats receiving 20 mg. choline daily in addition to the deficient diet failed to develop tumors.

These experiments by Engel, Copeland, and Salmon (69) constitute the clearest case of the production of tumors due to a single dietary deficiency in the absence of an external carcinogen. The development of hepatic tumors is presumably related to the continued presence of cirrhotic lesions. The production of cirrhosis in rats has usually been accomplished by the feeding of diets high in fat and low in protein (70–72), and Webster has reported the occurrence of neoplasms in four of twenty rats fed such a diet for five months or more (67). Dietary cirrhosis can be minimized by feeding methionine or the combination of cystine and choline (70–72).

In rats fed the carcinogenic azo dyes, some degree of cirrhosis usually precedes the appearance of hepatic tumors, but the severity of the induced cirrhosis does not necessarily parallel the carcinogenicity of the diet. Thus cirrhosis is minimized by diets containing choline (49, 73), methionine (74), or high levels of casein (40, 74) without a reduction in the numbers of tumors produced. Conversely, high levels of nicotinic acid amide or glycocyamine (73) aggravated the severity of cirrhosis due to monomethylaminoazobenzene without increasing the rate of tumor formation. Choline does not appear to affect the growth rate of pre-formed tumors (75).

Riboflavin

The recognition of riboflavin as a factor in the prevention of liver tumors due to azo dyes might be ascribed to the dietary habits of the Japanese. Japanese investigators first recognized the fact that compounds, such as aminoazotoluene and paradimethylaminoazobenzene, induce liver tumors in experimental animals, and the basal diets which they employed were related to the diets consumed by the Japanese themselves. One successful combination consisted of whole unpolished rice plus occasional slices of carrot. Adult rats fed such a diet do not maintain their weights very well in the presence of the carcinogens, and the mortality may be heavy, but the incidence of liver tumors in the survivors is high. When other investigators fed better diets, they failed to produce as many tumors with aminoazotoluene (76–78), for example, as had originally been reported. American investigators (79, 80) have been able to repeat the Japanese experiments, and one of the most effective ways of producing liver tumors in rats is to feed paradimethylaminoazobenzene in a semi-synthetic diet (81) in which the source of the B-complex is a concentrated extract of rice bran, which contains reasonably high amounts of all the B vitamins except riboflavin.

It was the work of Kensler and associates that focused attention on the importance of riboflavin in the development of hepatic tumors in rats fed paradimethylaminoazobenzene. They noted that rats fed the dye in a basal diet of rice and carrot rapidly lost riboflavin from the liver (82). The addition of ribflavin to the incomplete basal diet failed to affect tumor formation, but the development of tumors was largely suppressed when the riboflavin was fed with additional supplements of casein (83). Casein by itself had no effect.

The effectiveness of riboflavin against this type of tumor has been established in many other studies. The most active crude materials are yeast (79–81) and liver (81, 84, 85). A survey of thirty-four diets (81) revealed that those favoring tumor development were lowest in riboflavin and protein, whereas the most protective diets were high in both principles. Since the ability of the normal liver to retain riboflavin varies with the percentage of protein in the diet (86, 87), it would appear that protein *per se* has little direct effect, and that it functions primarily in enabling the liver to maintain a normal concentration of riboflavin.

Experiments with synthetic diets indicate that rats fed paradimethylaminoazobenzene readily develop tumors if the riboflavin intake is low (40, 88), and that tumor formation is retarded by riboflavin without other alterations in the diet. Variations in protein intake are ineffective by themselves (40, 88), although rats fed higher levels of protein appear better able to resist the generalized toxic effects of the carcinogen. A comparison of different azo dyes indicated that the more highly carcinogenic compounds were all very active in lowering the concentration of hepatic riboflavin. Moderate carcinogens were moderately active in this respect, whereas the non-carcinogenic azo dyes were essentially without effect on the ability of the liver to retain the vitamin (89).

Further evidence for the importance of riboflavin is that the development of liver tumors is retarded in rats fed high levels of the vitamin, whether the carcinogen fed is paradimethylaminoazobenzene (40, 83), paramonomethylaminoazobenzene (73), o′-methyl-paradimethylaminoazobenzene (90), or m′-methyl-paradimethylaminoazobenzene (90). Quantitatively, however, the protective effect of riboflavin against the latter compound, the most potent azo dye known (66, 91), is somewhat less than against the other dyes.

Riboflavin has been reported to delay tumor formation not only when fed simultaneously with the

carcinogen, but also in a subsequent period when the carcinogen was no longer fed (92, 93). The vitamin is ineffective against tumors in rats due to acetylaminofluorene (94), nor does it exert any appreciable effect against tumors in various organs of mice, including skin, subcutaneous tissue, or the mammary gland (95).

SUMMARY

Cancer may be regarded as a disease of nutritional abundance, for the development of certain types of tumors is favored by a high intake of calories, of certain kinds of fats, of nutritionally complete proteins, and of certain vitamins and amino acids. If the diet is too poor, most types of tumors fail to develop.

Other cancers may be regarded as deficiency diseases. The development of human cancer of the liver is associated with relatively poor diets. Liver tumors have arisen spontaneously in rats fed diets free from choline. Tumors due to azo dyes arise most rapidly on diets low in riboflavin.

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What Is a Profession?

The hallmark of a profession, originating how far back in the dim past we cannot surmise, is that its members minister to the people. It is out of this concept of ministry—of the assuming of responsibility for the vital affairs of others because of superior specialized knowledge—that there have grown the idealism of the professional man and the recognition in him by others of a quality of altruism which is its own reward. Upon this recognition by the people is based the continuance of a profession, for it exists only as the people, because of confidence in its integrity and faith in its general beneficence, permit it to maintain its prerogatives and to speak with authority in its own field. A profession is a class apart, but apart because of admitted dedication, not because of special privilege or falsely assumed superiority. It strives to be apart from the mean, the petty, the materialistic in the mass of mankind. But it is apart from the worthy in mankind only to the degree that it seeks—often fumblingly, it is true—to approach more closely than may the mass the wellsprings whence the worthy rises.

Consequent upon this inherent concept of ministry to the people as the hallmark of a profession are its other and more outward characteristics. Thus, in our own day such professions as medicine and the law exhibit much of practice and ritual in which, through all the changes of language and all the elaborations of time, are to be discerned paraphernalia and customs the origins of which are lost in antiquity. But more than manner and ceremonial are involved. Whether from the aboriginal medicine man, from Apollonian diviners, from Etruscan haruspices, or from whatever ancient source we choose to derive the concept, the group which is truly a profession because of its ministry to the people still, as its precursors did, safeguards its ministry by the maintenance of a strict code of conduct; by the long training of neophytes inculcating in them pride in the cult, initiating them into the mysteries, and disciplining them rigidly in its formulas; and by the severe restriction of its numbers through the imposition of intellectual hurdles to be surmounted.—*Excerpted from "What Is a Profession?" by Vannevar Bush, President, Carnegie Institution of Washington, in Chemical and Engineering News 26:1582 (May 31), 1948.*

Comparison of Three Methods for Ascorbic Acid Determination Using the Sweet Potato[1]

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DATA for the ascorbic acid content of foods by various methods of analysis are accumulating. On presentation of a new method or a modification of an old one, the values obtained are usually compared with those found by one of the more commonly used photoelectric indophenol methods based on that of Bessey (1). This study was undertaken to compare values obtained by three current methods: (a) the indophenol method of Loeffler and Ponting (2), (b) the indophenol-xylene extraction method of Robinson and Stotz (3) and the formaldehyde modification of it, and (c) the 2,4-dinitrophenylhydrazine method of Roe and Oesterling (4) for dehydroascorbic and total ascorbic acid.

A single commodity, the sweet potato, was chosen for study because, as an important regional farm crop, it makes a definite contribution of calories, carotene, and ascorbic acid to the diet. Due to its high carbohydrate content and to the fact that it is stored through the winter, it provides a possible source of the types of interference inherent in or measured by the above methods, such as reductones, sugars, and alteration in total ascorbic acid content due to loss of reduced ascorbic acid.

EXPERIMENTAL PROCEDURE

Porto Rico U. S. No. 2 sweet potatoes[3] grown on the farm of the Tennessee Agricultural Experiment Station were used. They were analyzed at harvest, after cure (storage in an electrically heated room with high humidity at 80° to 85°F. for seven to ten days until sprouting began), and at the end of four successive six-week storage periods during which the humidity was lowered and temperature maintained at 50° to 55°F. The duration of the study was twenty-six weeks. Analyses were made on raw and baked sweet potatoes. They were baked at 350°F. in a preheated oven until soft, an average of 45 min. It was assumed that the weight loss on baking was a moisture loss.

Market grades No. 1 and No. 2 were analyzed. The sample of each grade consisted of ten potatoes which were analyzed individually, and the average of the ten values was used. As the data accumulated, no significant difference was found between the ascorbic acid values of grades No. 1 and No. 2, so the twenty sweet potatoes were treated as the unit sample for each period.

An effort was made to include the complete size range. Unpeeled, radial-longitudinal sections were cut, and a single blending provided the sample for all three methods of analysis.

To obtain the dry weight of the sample, a slurry made by blending one part of sweet potato with two parts by weight of water was air dried in an oven at 85°C. to constant weight. The Robinson and Stotz (3) method was modified as suggested by Nelson and Somers (5). An Evelyn photoelectric colorimeter was used for all methods. A separate blending with thiourea added to the extractant was made for the dehydroascorbic acid analysis.

RESULTS AND DISCUSSION

Table 1 presents average values with standard errors in per cent for dry weight and for ascorbic acid content on the wet weight basis for raw and baked sweet potatoes. Table 2 presents the ascorbic acid value on the dry weight basis. The average raw weight of all roots sampled was 187 ± 6.0 gm., and the average loss of weight on baking was 14.8 per cent of the fresh weight.

Reduced Ascorbic Acid

The Robinson and Stotz xylene extraction method (3) tended to give slightly higher values for reduced ascorbic acid than did the Loeffler and Ponting indophenol method (2) in which the excess dye was read directly (Table 1). The formaldehyde modi-

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TABLE 1

*Percentage of dry weight and ascorbic acid content on wet weight basis**

TIME OF ASSAY	DRY WEIGHT AND STANDARD ERROR	REDUCED ASCORBIC ACID OBTAINED BY INDOPHENOL METHODS WITH STANDARD ERROR			ASCORBIC ACID OBTAINED BY 2,4-DINITRO PHENYLHYDRAZINE METHOD (4) WITH STANDARD ERROR	
		Loeffler and Ponting method (2)	Robinson and Stotz method (3)	Robinson and Stotz formaldehyde modification (3)	Total	Dehydro
	%	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Raw						
At harvest	32.7 ± 2.27	30.2 ± 1.25	33.0 ± 1.21	31.5 ± 1.12	42.1 ± 1.39	not done
At cure	35.6 ± 0.38	30.2 ± 1.00	31.6 ± 1.10	30.7 ± 1.11	35.4 ± 1.08	8.1 ± 0.41
Storage						
6 weeks	35.8 ± 0.47	28.4 ± 0.71	28.6 ± 0.60	27.6 ± 0.58	34.0 ± 0.71	10.2 ± 1.01
12 weeks	36.6 ± 0.79	26.8 ± 0.60	29.2 ± 0.62	28.2 ± 0.71	34.4 ± 1.02	6.7 ± 0.44
18 weeks	35.1 ± 0.52	23.8 ± 0.73	24.0 ± 0.81	22.8 ± 1.05	31.4 ± 2.54	4.2 ± 0.43
24 weeks	34.3 ± 0.73	20.2 ± 0.38	20.1 ± 0.44	19.4 ± 0.37	17.5 ± 0.86	3.8 ± 0.56
Baked						
At harvest	44.1 ± 2.28	24.0 ± 1.34	30.6 ± 1.55	26.7 ± 1.48	53.7 ± 2.37	not done
At cure	44.3 ± 0.83	26.3 ± 1.58	28.5 ± 1.73	26.5 ± 1.61	38.1 ± 1.61	5.5 ± 0.38
Storage						
6 weeks	44.7 ± 0.47	24.2 ± 0.62	25.5 ± 0.72	22.1 ± 0.74	33.5 ± 1.21	6.2 ± 0.55
12 weeks	41.7 ± 0.70	24.3 ± 0.89	24.8 ± 0.81	23.2 ± 0.65	29.9 ± 1.50	6.3 ± 0.94
18 weeks	39.7 ± 0.80	20.8 ± 0.74	23.0 ± 0.97	19.7 ± 0.69	22.5 ± 1.30	5.2 ± 0.88
24 weeks	39.7 ± 0.58	17.7 ± 0.63	19.5 ± 0.82	16.4 ± 0.58	14.4 ± 0.89	2.7 ± 0.39

* All figures are averages of twenty samples.

fication of the xylene extraction method for the estimation of interference of the reductone type (3) indicated no reductone formation during storage and only a slight increase on baking. Robinson and Stotz (3) show an accumulation of this type of compound on dehydration of cabbage and to a lesser degree on preserving of fruit. In this study the two indophenol methods gave comparable data on the sweet potato, raw and baked, at harvest, at cure, and on storage up to twenty-four weeks.

Values obtained by all three methods are averaged for the discussion. The curing process caused the greatest change in ascorbic acid per unit time for the raw sweet potato. A decrease of approximately 12 mg. of reduced ascorbic acid per 100 gm. dry weight occurred in the two-week period. For the entire storage period, the average rate of loss was 1.2 mg. per 100 gm. each week. The loss of reduced ascorbic acid on curing was not shown by the baked sweet potato. The value at the time of curing for the baked potato was nearly the same as that at the time of harvesting, even though a loss was shown for the raw potato between harvesting and curing. The average rate of loss per 100 gm. for the baked potato during storage was 0.6 to 0.8 mg. reduced ascorbic acid per week.

The reduced ascorbic acid values of the raw sweet potato on storage are in agreement with the results reported by the Southern Cooperative Group (6). However, these workers reported no loss of reduced ascorbic acid on baking. In this study, the retention of reduced ascorbic acid on baking calculated on the dry weight basis was never greater than 84.5 per cent and averaged 72.3 per cent.

Total and Dehydroascorbic Acid

Because of its high carbohydrate content, the sweet potato can be expected to provide the type of interfering substances with which 2,4-dinitrophenylhydrazine will react. On storage, the degradation of ascorbic acid may result in the breaking of the lactone ring with the formation of diketogulonic acid which, according to Pijoan and Gerjovick (7), can react with this reagent. If a definite reaction with ketone compounds occurs, it should show itself by disproportionately high values in the dehydroascorbic acid analyses in which the dilution is one-fourth that of the solution taken for total ascorbic acid analyses.

The data did not give evidence of abnormally high values for dehydroascorbic acid (Table 1). Small and varying amounts were shown to be present in the raw and baked sweet potato. The presence of dehydroascorbic acid was also indicated by the higher values for total than for reduced ascorbic acid until the last storage period when the total dropped below the reduced value. The reason for this is not clear. Reduced ascorbic acid as calculated by the difference between total ascorbic and dehydroascorbic acid did not show good agreement with the results obtained by methods measuring it directly. However, if the last storage period in which the total ascorbic acid value was low is omitted, the agreement is fair, and

TABLE 2

*Ascorbic acid content of sweet potatoes on dry weight basis**

TIME OF ASSAY	REDUCED ASCORBIC ACID OBTAINED BY INDOPHENOL METHODS WITH STANDARD ERROR			ASCORBIC ACID OBTAINED BY 2,4-DINITROPHENYLHYDRAZINE METHOD (4) WITH STANDARD ERROR	
	Loeffler and Pointing method (2)	Robinson and Stotz method (3)	Robinson and Stotz formaldehyde modification (3)	Total	Dehydro
	mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Raw					
At harvest	94.0 ± 1.55	102.6 ± 5.56	97.8 ± 5.15	130.6 ± 6.16	not done
At cure	84.7 ± 2.98	88.8 ± 3.26	86.2 ± 3.25	99.4 ± 3.20	22.8 ± 1.11
Storage					
6 weeks	79.2 ± 1.48	79.7 ± 1.01	77.0 ± 1.12	95.0 ± 1.47	28.7 ± 2.90
12 weeks	73.3 ± 1.67	80.1 ± 2.28	77.4 ± 2.38	99.6 ± 2.87	18.4 ± 1.24
18 weeks	67.9 ± 1.85	68.6 ± 2.15	65.0 ± 2.69	88.7 ± 6.34	12.1 ± 1.20
24 weeks	59.2 ± 1.46	59.0 ± 1.63	56.9 ± 1.45	51.7 ± 3.05	11.1 ± 1.53
Baked					
At harvest	54.5 ± 2.99	69.6 ± 3.56	60.7 ± 3.39	121.2 ± 4.63	not done
At cure	59.8 ± 3.74	64.9 ± 4.11	60.3 ± 3.78	86.6 ± 3.92	12.4 ± 0.88
Storage					
6 weeks	54.3 ± 1.41	57.0 ± 1.68	49.5 ± 1.65	75.1 ± 2.59	13.8 ± 1.19
12 weeks	58.0 ± 1.72	59.5 ± 1.72	55.6 ± 1.45	71.4 ± 3.11	15.1 ± 2.15
18 weeks	52.4 ± 1.70	58.0 ± 1.92	50.0 ± 1.90	56.7 ± 2.89	12.8 ± 2.05
24 weeks	44.6 ± 1.54	49.2 ± 1.91	41.3 ± 1.40	36.4 ± 2.31	6.9 ± 0.98

* All figures are averages of twenty samples.

there is no indication that the fault is in too high dehydroascorbic acid values due to interference of ketone-type compounds. It is not reasonable to assume a greater interference at the higher dilutions used for the total values. Other factors which may modify this method have been demonstrated by Bolomey and Kemmerer (8).

Assuming the trends of these results to be significant, the loss of total ascorbic acid of raw sweet potatoes on cure on the dry weight basis was threefold that of the reduced ascorbic acid. It can be inferred that this loss represented dehydroascorbic acid and that this form of the vitamin is more important in the physiologically active root than in the cured and stored product. For the first three storage periods after cure, the loss of total ascorbic acid in the raw product was slight. A similar decrease of dehydroascorbic acid occurred. Baked sweet potato also showed a marked loss of total ascorbic acid on cure. The loss was checked during the first three storage periods, but the rate was found to be three times that of the raw stored product. Inconsistently the dehydroascorbic acid remained unchanged.

Good agreement between total and the sum of reduced and dehydroascorbic acid has been reported by McMillan and Todhunter (9) for cabbage. In this laboratory, the Roe and Oesterling (4) method has shown greater consistency within group samples for spinach and cabbage than for sweet potatoes, and the method has shown distinct advantages when used for urine analysis. It may be that natural basic differences in foodstuffs present a variety of interferences not easily recognized or manipulated by this somewhat empirical method.

The sweet potato by all methods of analysis is shown to make an important contribution of ascorbic acid to the diet throughout a winter storage period.

SUMMARY

Porto Rico U. S. No. 2 sweet potatoes, raw and baked, at harvest, at cure, and at four consecutive six-week storage periods were analyzed for ascorbic acid by three methods.

The two indophenol methods gave results which were in agreement. The result obtained by the 2,4-dinitrophenylhydrozine method for total ascorbic and dehydroascorbic acid did not show agreement with those by the indophenol methods and were variable.

In the raw sweet potato, a rapid loss of all forms of ascorbic acid took place on cure. During storage, the average rate of loss on the dry weight basis was 1.2 mg. per 100 gm. each week.

In the baked sweet potato, the rate of loss on the dry weight basis for reduced ascorbic acid was slightly less, while for total ascorbic acid it was greater than in the raw commodity. The retention of reduced ascorbic acid of the baked potato on a dry weight basis averaged 72.3 per cent.

The sweet potato is shown to make an important contribution of ascorbic acid to the diet.

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Psychological Aspects of Obesity

Hilde Bruch recently discussed in *Psychiatry* three different angles concerning the problem of obesity. She stated that there are three psychological aspects of obesity: (a) that of being obese, (b) that of becoming obese, and (c) that of treatment.

An obese person may show such personality characteristics as shyness, oversensitivity, easy discouragement, a tendency to depression, and a phlegmatic manner. Although these fortunes may be caused by the person's concern over the impression he makes because of his obesity, he seems unwilling to do anything about it. The theory is advanced that obesity has a positive emotional meaning to the individual.

Considered from a psychological point of view, some people become obese because food has come to stand for the love, security, or satisfaction they have been unable to obtain in their relationships with people or from diverting their abilities along creative or constructive lines. Uncertainty and anxiety are common among obese persons. The aspect of obesity which makes it different from other forms of emotional mal-development and neurosis is that food has been used as a means of obtaining immediate gratification or as a defence against anxiety.

The physician who is treating an obese patient needs an understanding, sympathetic, and respectful attitude towards the patient's problems. He should also help him gain some insight as to his real problem. Regular visits are important and a prescription which isn't given "as a magic pill that will do the job" may insure these visits.—*Abstracted from "Psychological Aspects of Obesity" by Hilde Bruch in Psychiatry 10: 375 (November, 1947).*

Food Situation in India

The following description of conditions in India is taken from a letter to Millie E. Kalsem, Director of Dietetics, Cook County Hospital, Chicago. It is written by a former staff member, Barbara Pittenger, who is now with a medical missionary group in Calcutta.

India, as you have read, is in an extremely important year of her growth. No one here knows what will happen in the future any more than they expected the terrible bloodshed and unhappiness in the Punjab.

My work is centered in Calcutta at Unit headquarters, although I have been able to visit most of the Unit work throughout Bengol. We are just closing an extensive feeding campaign throughout Bengol and Bikar provinces, using UNRRA milk and cereal. Famine, we believe, has been averted this year, though a great deal of juggling of rice quotas was necessary. The Punjab, as you probably know, is the main source of wheat for India and the richest agricultural district. Her farming and industries are almost at a standstill and a great deal of the crops have been ruined. The people are in such a state of upset that they aren't able to harvest what is in the field. Those of our Unit working up there predict a very bad famine and inability to recover for a number of years.

Bob, my husband, leads a Unit medical team which is obtaining supplies in West Punjab and then going into East Punjab to care for Moslem refugees. We hope soon to have a team in West Punjab caring for Hindu refugees. This emergency work began September 1. Since then we have seven Unit members and a large number of workers in Delhi and the Punjab. Our ranks here in Bengol are sadly depleted, as our Unit consists of only sixteen personnel—Britishers from England and New Zealand, Indians, and Americans.

I am collecting data on Indian food, learning the preparation of their complicated dishes, collecting recipes and recipe books, and contacting hospitals. I met a young English girl, formerly a dietitian at one of the large local women's hospitals. She believes there are only a very few dietitians in India.

The Development of the American Food Pattern[1]

EDITH M. BARBER

EVERY American is familiar with at least one historical date—1492. That year, therefore, might be considered as the date when the modern American food pattern began to develop. Actually, its initiation goes back thousands, perhaps millions of years to the period when primitive man discovered the use of fire, began to construct weapons for the hunt, learned to domesticate both wild animals and grains, and invented tools for cultivation.

The ancestors of all mankind are now believed to have sprung from the same stock which originated in the eastern hemisphere. Some of the divergent groups wandered across the land bridge which at one time connected the two hemispheres and took with them the primitive culture of the Stone Age. After some cataclysm of the earth destroyed the link, the two halves of the world remained separate entities until adventurous spirit and inventive genius combined to bring them together again.

In both hemispheres, the original nomadic life was modified by the settlement of groups in fertile valleys which with cultivation could produce an adequate year-round supply of food. Again and again, new groups of nomads swooped down upon the villages, conquered them, and adopted the pattern that had been set. Usually the conquered and the vanquished intermingled. Each gave something to the other. In the Old World, the introduction of the horse as a means of transportation from the East, for instance, had an immeasurable effect on the spread of civilization. The invention of sea-going craft was perhaps even more important, and through these two mediums it became possible for products of various countries to be exchanged. Traders made annual pilgrimages throughout the known world with caravans of precious spices. Seeds of fruits, such as the peach and the melon, which are believed to have originated in Persia, and undoubtedly a variety of grains and vegetables were introduced into countries where climate was suitable for their cultivation. All the way from Burma came the hen which, when brought into Egypt, was called "the bird that works every day."

The history of the rise and fall of eastern civilizations followed a pattern which in many respects corresponded to the ever-changing relations of the settled inhabitants of the first villages and the nomads. The great kingdoms of Babylon and Egypt fell, and the conquerors adopted the culture that had been developed and either mingled with the inhabitants or took the new learning back to their own countries. The Greeks absorbed much from the Persians and the Egyptians. The Romans, in turn, followed the Greeks and in conquering the world took to their colonies new foods and methods of preparation. While much of this was lost in the Dark Ages, traces lingered, as exemplified by the fact that until long after the Renaissance, French and English cook books differed little from the *Apicius* of the Romans, believed to have been compiled in the first century A.D.

EARLY CIVILIZATIONS IN THE AMERICAS

On the other side of the world, the highly developed civilizations were centered in Central America and the northern portion of South America. The lack of any native animal, such as the horse, suitable for fast transportation or of one, such as the camel, which could be used successfully for long journeys was one factor which prevented widespread adoption of the culture so highly developed in Mexico and Peru. Another lay in the fact that the inventive genius of the Mayas and the Incas did not include the construction of vessels which were adapted for long ocean voyages. That the Indian inhabitants of North America wandered far afield is, however, demonstrated by the fact that maize, believed to be a native of South or Central America, was cultivated throughout the northern portion of the continent and was the staple supplement of the products of the hunt. Some of the warlike tribes, such as the Toltecs and the Aztecs, followed the practice of the nomads on the other side of the great ocean and settled down to enjoy the comfort of the inventive genius of their predecessors.

THE DARK AGES

On the other side of the Atlantic during the Dark Ages, there was little interchange of any type between nations in western Europe. The food staples

[1] Presented at the 30th Annual Meeting of the American Dietetic Association in Philadelphia, on October 17, 1947.

were grains, which were made into coarse bread; fish, and salt meat throughout most of the year; and a rather poor quality of poultry and eggs. These were supplemented by a few vegetables and fruits in season. Milk and fresh meat were impossible to obtain during the winter months, as the methods of raising fodder to feed cattle during the winter were unknown. The diet was necessarily monotonous, and this created a demand for spices which perhaps began with the Crusades and continued to expand as the age of exploration began. In the fourteenth century, the rise of a new trading class and at the same time the interest of the Christian fathers in sending missionaries to the Orient to attempt to spread the gospel combined to create a revived interest in the luxuries and customs of the East. The reports of the fabulous wealth incited more explorations, and before long trade routes by land and sea had been established. Venetian merchants followed the footsteps of Marco Polo, and Venice became the trade center of the world. It was in Italy that the Renaissance of the lost arts of cookery began. The introduction of new methods was stimulated by the importation of rare fruits, sugar, and spices. The invention of the printing press allowed the results to be more widespread, and a few decades before the discovery of America a treatise on cookery was printed in Italian which was also translated into French and German. That the old Roman influence was still felt is seen, however, by the fact that almost at the same time the Roman cook book of the first century, the *Apicius*, was set in print.

The first deep impression upon western Europe was not made, however, until Catherine de Medici married the heir to the French throne in the early part of the sixteenth century and took with her to France her own Italian chefs. This initiated the interest in fine cookery for which France eventually became famous and whose influence spread throughout the world. In the meantime, however, the taste for spices had become almost a cult, and all that could be imported found a ready market, often at an exceedingly high price. The short passage to India which Columbus hoped to find was desired as much in the interest of these condiments as for the sake of the gold and precious stones. Great was the disappointment of Columbus when he reached what he believed was India and found almost no gold and precious stones, and spices which were quite different from those which were in such demand in Europe.

FOOD CONTRIBUTIONS OF THE NEW WORLD

However, the most valuable products of the New World eventually proved to be the foods which previously had been unknown to the Old World. Perhaps the first to be appreciated was the turkey, at first known in Europe as the "Indian peacock" and which before long replaced the old world peacock on the banquet table. The second was chocolate which was imported for use on the European table but which could not be cultivated successfully in a temperate climate. Attempts were made to introduce maize, but this was not well accepted by the wheat-eating Europeans. It was many years before the American potato was to save Europe from famine and eventually to become the staple food of many countries. Strangely enough, it came to the Northern American colonies via Europe. The tomato also had to wait for acceptance—and a much longer time—in both hemispheres. Other products of the New World were eventually introduced for cultivation in the colonies of the South Seas. Tapioca and cashew nuts are examples of some of the foods of the Americas which flourished under intensive cultivation. Chocolate is another product for which our principal source eventually came to be the other side of the world.

FOOD IMPORTS TO THE AMERICAS

In exchange for native American products, the Spaniards brought to the New World all sorts of foodstuffs previously unknown here. Among the animals, none was more important than the horse which, although not used for food itself, immediately made a new type of transportation of food possible. Without this animal, the cattle industry could not have been developed. More generally bred than cattle were the pigs which became the dependence of the peasants. The hen was another contribution and became acclimated as easily as it had in the western part of Europe. Sugar cane, new grains—especially wheat and rice—vegetables, and fruits under the careful supervision of the monastic orders soon became prolific around the missions which pushed westward and where the European grape and to some extent the orange and the lemon flourished. Although the fruits of these agricultural projects were limited for many years to the localities in which they were grown, the foundations of our modern food industries upon which we depend today were laid. Thus we can trace the development of much of our modern food pattern to this ancient source.

The reports of the wealth of the New World acquired by Spain naturally stimulated the other European countries to attempt to share in this prosperity. The Portugese, the Swedes, the French, and the Dutch all organized expeditions to lay claim to possessions along the Atlantic Coast. All of these countries hoped to find gold and spices and were also interested in obtaining new fishing grounds. Many of the expeditions were composed of adventurers who were not equipped to cope with the wilderness from which they must wrest a food supply, generally under unfavorable climatic conditions, since the Spaniards were too well entrenched in the South to allow competition there. The greatest and most successful aspirants were the English whose great

trading companies had already been organized and who shortly began to plan for colonization of a New England as part of their great empire.

The first successful English colony was in the temperate climate of Virginia. There, after agricultural workers and artisans had been encouraged to settle, a modified form of feudalism, built largely upon the slave system, developed on the large grants made to the aristocracy. The planters attempted to reproduce as far as possible the English culture of the period including the food customs which, with the luxuries brought by the trading companies from the Orient, were then being elaborated. A greater interest in the cultivation of a larger variety of fruits and vegetables whose source was both the Old and the New World had also begun.

Farther north, the Puritans, beginning their sojourn on the rocky shores of New England instead of on the more fertile plains of Virginia, had a struggle for survival. The native inhabitants in both sections were Indian tribes in a state of civilization not far beyond that of the Stone Age. Although their aid in showing the settlers how to use the native maize, beans, pumpkin, and edible wild fruits and their instruction in the primitive methods of planting and harvesting no doubt saved the colonists from starvation, there was no certain food supply until after the cattle, pigs, chickens, and the English grains had been introduced and successfully cultivated by means of the tools unknown to the primitive inhabitants.

The Dutch colonists of New York and the English who came later to Pennsylvania under the grant from William Penn were better equipped to meet the conditions in the New World which by this time were better understood. In all the colonies, however, in a comparatively short time, there was a liberal food supply. There were the forests with their generous game supply and always maize or corn, pumpkin, and beans which grew without intensive cultivation. The lack of a great variety in foods was not the calamity which it would be considered today, for few of the colonists had been accustomed to this although they doubtless longed for wheat bread, butter, and cheese, which had been the staples of their former diet, and perhaps for a touch of spices. In general, it was only among the aristocracy that there was much use of the imported luxuries and of the newly cultivated vegetables and fruits. The latter were more highly considered for their contributions, with which they were often falsely endowed, in the prevention or cure of disease. Many were believed to be actively harmful, although Boorde, author of the *Breviary of Health*, published in the middle of the sixteenth century, stated, "There is no meat nor herb but God has given virtue to them to help men." That cookery had become of some importance is shown by the following quotation, "It is a common proverb that God may send a man good meat, but the devil may send an evil cook to destroy it. Wherefore, gentle bakers, sophisticate not your bread made with wheat. Gentle bakers, make good bread, for good bread doth comfort, confirm, and establish a man's heart."

EARLY WRITINGS ON FOOD

During this same century, a number of treatises on husbandry called "herbals" were published. These gave directions for the production of foods and often directions for cooking them. This was necessary to promote the use of new foods, such as the potato which, however, was not in common use for some time after this. Fine berries and larger fruits were cultivated on the great estates, but the general diet consisted of meat and fish salted throughout most of the year, bread and cheese, honey for sweetening, and ale.

In the Elizabethan period, William Harrison, a writer of the day, comments upon the fact that melons, squash, cucumbers, radishes, parsnips, carrots, turnips, and all kinds of salad herbs were grown for use at the table of "delicate merchants, gentlemen, and the nobility who make their provision yearly from new seeds out of strange countries from whence they have them abundantly." He also mentions "delicate apples, plums, pears, walnuts, filberts . . . planted within 40 years past," and "strange fruits, apricots, almonds, peaches, figs, and corn trees in noblemen's orchards. I have seen capers, oranges, and lemons, and heard of wild olives growing here." It is known that oranges and lemons from Spain were hawked about the streets of London during this period. These evidences are proof of the fact that the Colonists, even though they may not have had a varied diet themselves, were at least familiar with many new products and were ready to adopt them when seeds could be brought to America.

INFLUENCE OF THE FORK

Another factor which had an effect upon the food preparation in western Europe and eventually in the New World was that simple utensil, the fork. Before its introduction, meat appeared at the table in one of two forms, either grilled in large pieces from which portions were cut with the knife at the table and popped into the mouth by means of the fingers, or chopped or hashed to be eaten with a spoon. Forks were so rare in the seventeenth century that it was considered worthy of note to describe the three forks owned by Queen Elizabeth —one of crystal garnished with pearls and garnet, one of gold, and the third decorated with ruby, pearl, and coral. It is believed that the Queen seldom used them, and it was not until some time later that their use became fashionable, and then against the invectives of some of the clergy who insisted that God's own creatures were designed to be handled by human hands. The later treatises on cookery

show the eventual submission to what were first called foreign customs of eating.

Many of the nursery rhymes, some of which are older than the forks, give us some idea of the popular foods, of which pie must have held the palm. "Little Jack Horner," for instance, ate his Christmas pie with his fingers. We find it mentioned again in the "Four-and-Twenty Blackbirds," "Simple Simon Met the Pieman," and in the "Queen of Hearts Who Made Some Tarts."

As the English colonies prospered, visits "home" were made regularly, and the new fashions in food as in other things were imitated as closely as possible even by the Puritans who originally had scorned as being popish the use of mince pie and other dishes associated with Christmas. Those new drinks, tea and coffee, were served in the well-to-do colonial households, and there were even a few coffee houses somewhat like those in London which had become so famous. The New England traders competed with the English and brought spices and other luxuries from the Orient. The fishing industry was responsible for relations between the Caribbean Islands and the northern cities, and the salt fish was exchanged for sugar, molasses, rice, fruits, and other tropical products. Eventually, a three-way trade developed. African slaves were taken to the West Indies and exchanged for sugar and molasses which was made into rum in New England, which in turn was used as payment for the slaves

From all the coastal regions, colonists pushed farther West, living at first on the products of the hunt, until forests could be cleared and pastures and farm lands made ready. They took with them the foods and methods of cookery which had become typical in the East; thus the southern and New England influence predominated as the settlements grew. The majority of these habits had, of course, stemmed from England, although the original Dutch influence in New Amsterdam lingered for many years after this port had become New York. In Pennsylvania with the many German settlers of conservative religious sects, the cookery customs of the homeland were modified only by the larger variety of foods and their plenty.

THE FRENCH INFLUENCE

Except in Canada and in some of the islands of the Caribbean, the French influence was largely superseded by the English, although later it was again felt in New Orleans in the interval when Louisiana belonged to France. This was accented by the French immigrants who found a refuge there after the French Revolution. Indirectly, however, the fine methods of cookery which had been developed in France were felt in the colonies. The many cook books which followed each other in England beginning with the early part of the eighteenth century included French dishes, and visitors to England brought these books back to America where they became the standard cook books of the colonies. Some were reprinted in this country without any change or with a few additional recipes. *The Art of Cookery* by Hannah Glasse was one of the most popular. Another well known book was by Miss Mason, a copy of which is still to be found among Mary Washington's relics.

The cook books of this period are comparatively modern in their treatment of food and differ greatly from those of the previous century, many of which were designed for spoon meats, compiled as they were before the fork was in common use. Most of the eighteenth century books, written by women or men who had been chefs for the nobility, include directions for the cultivation of vegetables and fruits and also contain many medicinal remedies. The variety of vegetables and fruits is somewhat amazing, unless we realize that the gardeners on the large estates raised many products under glass and competed with each other. The introductions to most of these cook books inveigh against the extravagance of French cooks, but their own methods seem extravagant enough to us. For example, Hannah Glasse says:

> A Frenchman in his own country would dress a fine dinner of twenty dishes, and all genteel and pretty, for the expence he will put an English lord to for dressing one dish. But then there is the little petty profit. I have heard of a cook that used six pounds of butter to fry twelve eggs; when everybody knows (that understands cooking) that half a pound is full enough, or more than need be used: but then it would not be French. So much is the blind folly of this age, that they would rather be imposed on by a French booby, than give encouragement to a good English cook!

Mrs. Glasse admits that she has given some of her dishes French names, and it is very evident that she has gone to this source for methods of preparation.

EARLY AMERICAN COOK BOOKS

The first cook book printed in America is believed to be an abstract of *The Compleat Housewife* by Mrs. E. Smith to which additional recipes containing American products were added. The first "native" cook book written by an American of which any trace remains was by Amelia Simons and was published in Hartford in 1796. The majority of recipes in this volume have evidently been plagiarized from English cook books. This book had innumerable editions to some of which the names of other authors were attached. Another book, by Lucy Emerson and published in Troy, is an exact duplicate except for a few additional recipes at the end of each section. Both authors claim to be American orphans and in exactly the same words made a plea for aid to them —which included the purchase of the book.

At about this same time, the *Pocumtuc Housewife* was published in Dearfield, Massachusetts, and was the forerunner of the many local cook books compiled from recipes of the best cooks in the com-

munity. This book is described in the preface as being "the fruit of experience, recipes gathered from elderly lips." From it we get an insight into the types of food used at that date by a well-to-do farmer's family which depended almost entirely upon home raised products. Meals were ample with sausages, ham, souse, fried pork and eggs, pork and apples with milk gravy, boiled Irish potatoes, salt mackerel, shad, Johnny cakes, hot hoe cakes, and rye and Indian bread. This significant statement is made, "It is always best to keep flour or bread in the house, but with a large family of farm hands, it can not be eaten commonly." Hot cakes and sometimes pie were also suggested for breakfast. The standard menu for a week-day dinner included boiled corned beef or pork with a pudding and seasonable vegeables and a pudding. For company and great occasions, roast pig and turkey were indicated. Supper included the cold meats and the vegetables left from dinner. Brown bread and milk with pumpkin or baked apples or berries was considered a summer supper menu, with Hasty pudding and milk for Saturday night all the year around. As a change, it was suggested that "when a team goes to Boston for the winter with a load to sell, have it bring back a 50-lb. fresh codfish and a barrel of oysters along with the molasses and sugar supplies."

From the recipes, we learn that spices, raisins, and other dried fruits were also bought. Pie, gingerbread, and custards were considered good enough for common use, but a "loaf of rich cake should be kept on hand for unexpected company." There are meticulous directions for managing a brick oven and the order of baking a week's supply of brown bread, flour bread, pie, cake, puddings, apples, and baked beans. For the breads, yeast is used for leavening. For some cakes, pearl ash made from wood ashes is used with sour milk and molasses. There is mention in a note of a manufactured article called soda to be used in conjunction with cream of tartar and sweet milk.

The type of menus and the dishes which appear in the *Pocumtuc Housewife* are typical of the menus of the period, and there was little change from these customs until the beginning of the industrial revolution which began about a century ago. This has indeed been a century of progress when it comes to our supplies of food and to the methods for their preparation. The invention of the kitchen range which shortly replaced the brick oven was perhaps the one which made the change most noticeable to housekeepers in general. After the discovery that coal was a more efficient fuel than wood, it became possible to use the oven more successfully in baking cakes and hot breads which previously, except when the brick oven was heated once a week, had been only occasionally baked in a tin oven put before the fireplace to make use of the reflected heat.

EFFECTS OF INDUSTRIAL DEVELOPMENTS

Coal and the invention of machinery were together responsible for a great change in the milling industry, and before long, it became a general custom to purchase the fine white flour ground at the new type of mill instead of taking the home-raised grain to the local mill, having it ground for use at home and perhaps trading the surplus in town. The adaptation of the steam engine for use on ships and railroads made it possible to transport food products from distant points and also to bring them in large volumes to the centers of population. Foods which had been luxuries gradually became staples. Fruits, such as oranges which had been Christmas treats, came in even greater numbers by boat, and eventually the banana became a well known fruit. The railroads brought fresh food to city markets in season from points too distant to have previously been a source of supply. They were responsible for the first general supply of good quality milk for city use. The industrial age, together with the previous scientific research, made possible the organization of the canning industry through which milk, vegetables, fruits, fish, and eventually meat could be preserved and distributed without danger of spoilage. It also made possible the invention of processes for preparing certain products, such as cornstarch, tapioca, and gelatin, all staples of today, but which had little or no use in an earlier age.

Through the cook books which were successively published in the United States, we can trace the introduction of new products and methods for their preparation. During the first half of the nineteenth century there were comparatively few publications of this sort, but in the latter half, the opposite was the case. All of the earlier books show that the brick and the tin oven were commonly used, and we find no recipes for hot biscuits and muffins which we often consider old-time products. There is no mention of the use of baking powder, although occasionally soda appears in a recipe. Chocolate has a place only in recipes for beverages. No cereals except cornmeal are given consideration. Canned products of all sorts are notable by their absence. Fresh vegetables and their seasons are given some attention, but lettuce and cabbage are the only ones suggested for use in salads. The menus are notable because of the number of meats which seem to appear at every meal and often in more than one form. Desserts, such as custards, pastry, preserves, and cakes of many varieties, are given much space. An influence which showed in the publications of the middle part of the century was that of the temperance movement. We find lemonade and ice water suggested for beverages as an alternate for those who disapproved of wine. The service of ice water was a novelty which had not been possible before house-to-house distribution of ice began.

GREATER VARIETY IN FOODS

Cook books in the latter part of the century show the gradual introduction of a greater variety of products. They also include descriptions of new types of household utensils, such as the meat grinder and the ice cream freezer, and eventually recommend the use of gas as a fuel. Menus were more varied with an increased use of vegetables and fruits in fresh and canned form and of salads and show the trend toward a smaller use of meat and an increased use of hot breads. It is not until the latter part of the period that the cook books show any influence of the nutrition factor in choosing food for the day. Half a century before this, Sylvester Graham had become concerned with the refinement of our cereal products, and his influence was responsible for a number of health cults which promoted the use of whole grains and a vegetable diet often to the exclusion of meat. In general, the evangelists on this subject were considered faddists.

Coincident with the rise of large industries, came the wave of immigration, first from the northern parts of Europe and later from Italy and the Balkan states. Every group brought their own food customs to which they clung to some extent, while at the same time making use of the American staples, such as sugar and white bread, which had been luxuries in most of their homelands. In the large cities, markets and restaurants designed to serve these various groups which tended to center in particular neighborhoods soon began to be patronized by others.

Another effect on our food customs for which the industrial age was responsible was accomplished through the demand by captains of industry and the kings of finance for French cookery in the fine hotels and restaurants which had begun to spring up in the large cities. Some of these wealthy families, as well as the eating places which served them, tempted some of the finest European chefs with high salaries to come to our shores. Menus printed in French became common in the dining rooms for which they were responsible. Before long, French terms were used on many menu cards to describe dishes which had little in common with their titles. The French influence began to show also in the cook books of this period. This was the case to a lesser extent with other foreign types of dishes.

EMERGENCE OF KNOWLEDGE ABOUT NUTRITION

It was not until the beginning of this century that any particular consideration was given to the healthfulness and the sanitation of our food supply, except in some efforts to have pure water and a safe supply of milk. The adoption of the practice of pasteurizing milk by some large cities showed that the typhoid fever and to some extent tuberculosis could be controlled and that infant mortality could be greatly reduced. Public attention then turned to necessary improvements of the meat supply which was greatly aided by the invention of the refrigerator car. Government inspection of meats was instituted, and today our meat supplies are guarded zealously by rigid standards. This was followed by agitation for the prevention of the adulteration of canned foods and of their preservation with chemicals. Many communities made their own regulations in regard to the protection of food products in retail stores. The trend toward packing staples in cartons is a comparatively recent development which has grown until today the majority of our foods are sold in packed form instead of in bulk. The introduction of ready-to-eat cereals necessarily packed in this way perhaps began the trend toward packaged foods and other ready-to-use products.

When vitamins were discovered, the general public at last began to take much interest in the nutritive qualities of food. Before this, the term "balanced diet" had been invented, but it was applied merely to the protein, fat, and carbohydrate content of food measured by calories. Minerals were recognized as being necessary for complete health, and the scientists had evolved standards for calcium, phosphorus, and iron. These facts, however, did not catch the fancy of the public, and the consideration they receive today is really an aftermath of the exploitation of vitamins. Advertising campaigns which took advantage of the natural vitamin content of fruits and vegetables had an important effect upon the creation of a new attitude toward the choice of food, and improved methods of cultivation and transportation have made possible a year-round supply in a volume allowing comparatively reasonable prices. Improvements in methods of cookery also occurred after it was discovered that some of the natural vitamin content of fresh vegetables was lost by long cooking and by the use of a large amount of water. The wartime measure which called for the enrichment of white flour and commercial bread with certain vitamins and minerals produced such good results that many states adopted laws to this effect after the federal law lapsed.

During rationing, we learned that we could live pretty well without such large quantities of sugar, fats, and meats. We missed some of the imported products and welcome their return to the market, but even our "limited" wartime menus had a much greater variety of daily foods than was true at the turn of the century. Compared to an earlier date, our wartime meals included a much smaller amount of meat, a slightly lower use of breads and cereals, and much greater quantities of milk, vegetables, and fruits. While our tables are not loaded with innumerable dishes which custom of a century ago decreed must appear on the tables of those who could afford them, menus today are more satisfying to the taste as well as to our well being.

Writing That Sells Good Diet[1]

AMY GRONNA COWING

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DIETITIANS have the problem of communicating dietary information to the masses—to the average readers with about seven to eight years of schooling—and to under-average folks who can't, don't, or won't read. These problems in writing are not much different from those we encounter in the Extension Service. Judging from the nutrition publications I have seen, you must prepare written material on the same three levels that we must: first, the top level—reports that document research and technical articles for professional journals reaching college readers; second, publications for teachers, other dietitians, and students—material for teaching purposes to be used from the high school to college level; and third, material written on the popular level to reach the layman or the average reader.

It is this popular level that we all need to do more about, and that is what will be discussed here.

WRITING FOR THE ADULT LAYMAN

It's hard to popularize scientific subjects. It's hard to write scientific material much below the eighth grade level and yet be accurate. We must translate technical concepts as well as technical language when we are writing for the layman. And remember—all of us are laymen on some subjects. We all want information presented in simple language when we're beginners. That's why we have text books graded according to the level of the student.

Your publications on better diets are really text books for homemakers. To hold the interest of less-schooled homemakers, you must "talk adult" in children's language—at least in simple language. The concept must be adult but not beyond the reader's experience; the language must be simple but not too "primerized."

When the Army educated some of the functionally illiterate soldiers in World War II, new primers had to be written with adult concepts. The Army defined an illiterate as a person who cannot read with fourth grade reading ability. But, a husky soldier couldn't be interested in a text book with such childish concepts as "I see a cat. The cat sees me." His interest, however, could be stimulated by such ideas as "tomorrow is payday" and "over there is the chow line."

Your job is even tougher than the Army's. You must interest people to read your written communications voluntarily. And all of your publications meet with terrific competition before they actually communicate your message to your readers. Your publications must be particularly eye-catching and interesting to overcome the general indifference to reading—especially among the less-schooled.

AMERICANS' READING HABITS

According to Stephen Leacock, "Nobody reads anything in America. Nobody can." He points out that we can't and don't read in spite of the fact that we have "more schools and better schools, and spend more money on schools and colleges than all of Europe." He says, "We print more books in one year than the French print in ten; we cover our country with 100,000 tons of Sunday newspapers every week, but we don't read them—we're too busy. Instead, we use them for fires and to make more paper. We buy thousands of new novels at $2.00 each, but we don't read beyond page one. . . . Tons of circulars pour through our mail, through our houses, and down our garbage chutes. The last American who sat down to read died in about the days of Henry Clay."

Of course, this bit of Leacock satire is not entirely true, but there is cause for concern when we are told by Bernice Leary that "less than 2 per cent of the 130 million people in this country are book readers." Instead of reading a book, people would rather see the movie version.

Maybe that's due to mental inertia, or maybe it's due to lack of time. But people like to read what they can read easily. They want information given to them in small doses—something they can read on the run. That partly explains why magazines, such as *Reader's Digest*, *Life*, and *Ladies' Home Journal*,

[1] Presented at the 30th Annual Meeting of the American Dietetic Association in Philadelphia, on October 15, 1947.

have such large circulations. They help their readers dig for the facts.

Advertisers, too, have learned this technique. They have learned that people like short items full of short words and short sentences, sprinkled generously with references to people. That's why the trend in advertising is toward brevity and concreteness.

Compare modern advertisements with this profound advertisement from the April, 1883 issue of *The Century Illustrated Monthly Magazine*. The heading of the advertisement reads, "Grateful—Comforting Epps' (Breakfast) Cocoa." Then it goes on to tell us:

> By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavored beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet, that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us, ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame.

Compare this testimonial with a modern advertisement for "Cocomalt" that reads: "When she grows up, will your little girl have *lovely legs?* No girl can have lovely straight legs like these without *strong bones*. *Cocomalt* gives your child *extra calcium* so vital for *strong bones*."

Note how "Cocomalt" has translated Mr. Epps' abstract verbal nouns into concrete picture words: we read that "Cocomalt will give *your* little girl lovely legs and strong bones." This ad is plain talk that speaks directly to the reader.

READING LEVELS IN THE UNITED STATES

We are told that the more schooling people have, the more apt they are to read. Only about 12 per cent of the adults in the United States have gone to high school and college. Another 12 per cent are functionally illiterate. That leaves about three-fourths of the grown-ups in this country who have had some grade schooling. Of course, we all know people with little schooling who are by no means lacking in intelligence and common sense. But psychologists tell us that there is a definite relationship between formal schooling and a person's ability to read. Learning to read is a special skill that we learn in school, and intelligence is not a substitute for training in learning how to read.

Teaching people how to read is a slow process. In the meantime, we must gear our publications to our less-schooled readers. How to translate technical concepts into the language of less-schooled readers is an art as well as a science. It's an art to get people to want to read what we write. It's a science to write so that people can understand us—or so they won't misunderstand us. It's so easy to be misunderstood. George Gallup tells about one of his first surveys in which he asked about the person's *length of residence*. He got this answer: "27 ft and 10 in."

We can't assume that people can read our minds and select the intended meaning of such double-barrelled phrases. We can't assume that they even want to read what we have written. We must humor our readers. We must slant our information to their interests as well as to their needs. We must camouflage what we think they ought to read with what they want to read. We must give them what they want to read in language that they can read easily.

This is more easily said than done. Easy reading is easier to read than to write. It takes more perspiration than inspiration. Even prolific writers like Mary Roberts Rinehart rewrite stories as many as three times to produce a "best-seller" that we read so comfortably.

Ernest Hemingway says he often rewrites a first chapter forty or fifty times to get a manuscript at the stage where "the reader gets everything." That stage, where "the reader gets everything," is what we're concerned with in the Extension Service. That's why we are measuring the readability of our Extension publications, to *estimate* how much our farm readers actually do get.

In our Extension Readability Unit in Washington we have been studying ways of measuring writing to find out what makes some of it easy and some hard to read. We have browsed around readability laboratories in different universities—University of Chicago, Ohio State University, and Columbia University, to name a few—where researchers have been taking writing apart for twenty years or more to find the reasons for reading difficulty. Some have worked out statistical formulas or yardsticks for measuring readability. I have discussed some of this research in an article called "Readable Writing" in this JOURNAL (1). Needless to say, I can give you only an appreciation of this research and not a detailed explanation. Here are a few of the "do's" and "dont's" we have picked up on how to write plain talk that sells good diet. I have tried to make this a working outline—a score-card that you can use in judging your own publications.

RECIPE FOR "PLAIN TALK"

The success of your publication will depend on how well you know your subject, how clearly you think it through, and how carefully you plan it. Good planning is determined by how well you select, sift, sort, and say your facts.

First, you *SELECT:*

(a) Suitable subject matter. Does it meet a need? Is it timely? Is it of current interest?

(b) The purpose of publication. What do you want it to teach? What do you want it to accomplish? Do you want to influence people to do something?
(c) The readers. Who are the people you want to reach? What are their problems, interests, and educational levels?

Second, you *SIFT:*
(a) Essential facts necessary to tell your story clearly to your readers.
(b) Screen out difficult concepts that are beyond readers' experience or understanding—such as, concepts of nutritive value of 100 gm. of selected foods, carotene content, International Units, micrograms, or milligrams.
(c) *Express* highlights. Don't try to *impress* readers with all you know. Don't document everything.

Third, you *SORT:*
(a) Facts in logical order.
(b) Set out important points in "1–2–3" order; help your readers dig for the facts.

Fourth, you *SAY* your facts in:
(a) Short sentences. Express one idea clearly.
(b) Short words. Use the simplest word that carries your meaning. Explain unfamiliar and technical words that have no simpler synonyms. Translate abstract words into concrete picture words, for example, translate "nutrition" and "vitamins" into foods.
(c) Personal references. Sprinkle generously with "we's," "you's," and "people" words, such as mother, boy, baby, and family.

MEASURING READABILITY

The shorter your sentences, the shorter your words, and the more you refer to people in your writing, the easier it is to read. These three ideas are the basis of the Flesch formula; this readability yardstick will help you to *estimate* how clearly you "say" your ideas to your readers. It will help you *weigh* your words.

Flesch estimates difficulty and complexity of sentences by counting the average number of words in sentences. He measures difficulty and abstractness of words by counting number of *affixes* (italic*ized* *pre*fixes and *suf*fixes) in words. Flesch measures the human interest of *your* writing by counting the number of words referring to *people*. The more personal references, the easier is *your* writing to read. Cook-book English has implied personalization. The cook-book style of writing is one of the best ways to communicate *your* ideas clearly. Most cook-book passages that *we* have tested check out about fifth and sixth grade reading levels.

The Flesch readability yardstick helps us compare our material with standard writing of known difficulty. For example, if your writing is hard to read, like this sentence and the following passage—with long sentences, long words, and no references to people, it will be college level—on a readability par with scientific journals:

> Neither growth nor health can be sustained unless the daily foods provide certain essentials called vitamins. Research has shown that the vitamins have great importance in many of the vital activities of the body. Health, growth, development, fortification of the body against disease—all these are directly affected by the vitamin content of the foods we eat.
>
> There are various kinds of vitamins, each kind having its own characteristics and functions. . . . . Vitamin concentrates are of great value where restricted diets or one-sided diets imposed by low incomes, ignorance, or indulgence have resulted in serious shortages or in acute symptoms of deficiency diseases, such as pellagra, scurvy, beriberi, and rickets.

Your writing will be easy to read if it has: (a) short sentences, (b) short words, and (c) lots of "people" words. It will be about sixth grade level—on a par with *True Story*—if it reads like this passage:

> You need vitamins. Everyone does—young and old. You need vitamins to build a healthy body and to keep fit and strong. When you eat fresh vegetables from your garden, you get vitamins in their natural form. Seeds are rich in certain vitamins. Green growing plants produce and hold vitamins. Ripe fruits, vegetables, and grains give you vitamins, along with other nourishment. You can't taste vitamins in food or smell them. For the most part you can't even see them in the food that you eat. To get all the vitamins that you need for all-round health, try to have in your meals every day the following 'Basic Seven' foods: (List foods.)

This easy writing is *speaking* writing; it is written the way we talk to people or about people in our everyday conversation. It's a funny thing—when we talk to each other, we do not speak of "trends in nutrients," "protective foods," and "symptoms of deficiency diseases." We unconsciously screen them out of our vocabulary. But when we write, we formalize our thinking and in some way these abstract terms sneak into our written communications.

There's a story about an old woman with very little schooling. She said she couldn't read *writing* but she could read some *reading* writing. By *reading* writing she meant what we call *speaking* writing. The writing she could read was written the way we talk. It was plain talk—written in language that is down to earth where we find people.

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Ascorbic Acid Requirements

Studies at the Louisiana Experiment Station which were recently reported suggest that the human requirement for ascorbic acid varies with the size of the individual. This work showed that the ascorbic acid level in blood plasma of smaller, lighter-weight people was higher than in larger, heavier people on the same diet. The range was from 61 mg. per 100 cc. in one person weighing only 132 lb. to as low as 30 mg. per 100 cc. in another weighing about 167 lb., both having the same intake of ascorbic acid.—*From USDA Food and Home Notes, March 10, 1948.*

Ascorbic Acid and Thiamine Content of Frozen Summer Squash[1]

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LITTLE information is to be found in the literature on the nutrients in summer squash when stored in the frozen condition. Woodruff and Scoular (1) in 1942 observed losses of ascorbic acid during the cooking of summer squash amounting to 40 per cent. Culpepper (2) in 1937 presented information on the general chemical composition of the Golden Crookneck and white Patty Pan varieties.

PROCEDURE

During the seasons of 1944 and 1945, two varieties of summer squash—Yankee Hybrid and Zucchini—which are commercially important in New York State and are planted in many home gardens, were grown for freezing. Yankee Hybrid is yellow in color, straight necked, and has more or less replaced the crookneck type of squash in New York. Zucchini is a green Italian squash. Samples were selected at different times during the growing season and at different stages of maturity. The very small squashes are more pleasing in taste to many people than the larger ones. Also, the vines produce prolifically if the small fruit are continually harvested. It is unlikely that such small squashes could be sold economically, but the home gardener with low-temperature storage space can pack them for use throughout the year. The medium size squashes are most generally found on the markets. Large ones were included in the tests to complete the study.

The range of dimensions for the various sizes was as follows: small, 4 to 7 in. in length by $\frac{3}{4}$ to about $1\frac{3}{4}$ in. in width; medium, from 7 to 10 in. long by $1\frac{1}{2}$ to $2\frac{3}{4}$ in. wide; large, 11 to 17 in. long by 2 to $4\frac{1}{4}$ in. wide. These dimensions are reasonably inclusive, but certain samples tended to vary slightly.

TABLE 1

Ascorbic acid, thiamine, and total solids of Yankee Hybrid summer squash grown in 1944, before and after blanching and after six months' storage at −6°F.

CONDITION OF SAMPLE	DATE OF HARVESTING	ASCORBIC ACID*	THIAMINE*	TOTAL SOLIDS
		mg./100 gm.	*mcg./100 gm.*	%
Small Size Squashes				
Raw	July 31	16.5	61.3	7.32
	August 8		63.8	6.28
	September 7	36.3	71.3	7.97
Blanched	July 31	13.0	53.8	4.99
	August 8		57.5	5.14
	September 7	14.9	66.3	7.13
After 6 months' storage at −6°F.	July 31	12.3	43.3	5.92
	August 8		62.5	6.48
	September 7	12.4	41.3	6.69
Medium Size Squashes				
Raw	July 31	16.3	58.8	5.44
	August 8	18.8	62.5	5.77
	September 7	25.8	77.5	6.96
Blanched	July 31	10.7	54.3	5.45
	August 8	11.8	55.0	5.76
	September 7	11.5	68.8	6.37
After 6 months' storage at −6°F.	July 31	8.9	38.8	4.93
	August 8	8.6	50.3	6.30
	September 7	9.1	31.5	7.01
Large Size Squashes				
Raw	July 31	15.0	57.5	5.27
	August 8	16.8	56.3	4.88
Blanched	July 31	12.0	50.0	5.70
	August 8	14.8	51.3	5.96
After 6 months' storage at −6°F.	July 31	8.0	26.3	3.84
	August 8	5.9	44.5	4.77

* Results expressed on wet weight basis.

[1] Received for publication May 24, 1947. Approved for publication as Journal Paper No. 713 by the Director of the New York State Agricultural Experiment Station, May 21, 1947.

TABLE 2

Ascorbic acid, thiamine, and total solids of Zucchini summer squash grown in 1944, before and after blanching and after six months' storage at −6°F.

CONDITION OF SAMPLE	DATE OF HARVESTING	ASCORBIC ACID*	THIAMINE*	TOTAL SOLIDS
		mg./100 gm.	*mcg./100 gm.*	%
Small Size Squashes				
Raw	August 9		62.0	7.35
Blanched	August 9		52.5	5.01
After 6 months' storage at −6°F.	August 9		42.5	7.07
Medium Size Squashes				
Raw	August 9		52.0	5.27
Blanched	August 9		45.8	4.70
After 6 months' storage at −6°F.	August 9		40.0	7.01
Large Size Squashes				
Raw	August 9		48.3	5.44
	September 7	14.5	78.8	6.93
Blanched	August 9		41.3	5.45
	September 7	6.0	70.0	6.78
After 6 months' storage at −6°F.	August 9		35.0	6.38
	September 7	3.7	52.5	6.38

* Results expressed on wet weight basis.

In preparing the squashes for freezing, they were cut into ½-in. slices without peeling. It was found that in the medium and large squashes, the centers tended to drop out of the slices if the squashes were peeled before slicing. Furthermore, the skins are tender and in no way objectionable, and the unpeeled product presented a considerably better appearance, both in the package and after cooking. The slices were blanched in boiling water for 3 or 3½ min., depending on the diameter of the uncut squash. The blanching times used were determined by finding the length of time necessary to inactivate catalase, based on the Thompson test (3), and then adding the usual safety factor of 50 per cent of the inactivation time. After blanching, the slices were placed in ice water and allowed to remain there for a minimum time necessary to bring the temperature down to that of ice water; then they were packed in waxed cartons.

In 1944, samples of the raw and blanched slices were analyzed for ascorbic acid according to the method of Robinson and Stotz (no modifications were necessary in the case of summer squash); for thiamine, using the thiochrome procedure of Moyer and Tressler (5); and for total solids (vacuum oven at 70°C.). In 1945, only ascorbic acid and total solids were determined, because of the small amount of thiamine in this vegetable.

Both years after six months' storage at −6°F., the samples were analyzed again to determine the effect of storage on the nutrients.

TABLE 3

Ascorbic acid and total solids of Yankee Hybrid summer squash grown in 1945, before and after blanching and after six months' storage at −6°F.

CONDITION OF SAMPLE	DATE OF HARVESTING	ASCORBIC ACID*	TOTAL SOLIDS
		mg./100 gm.	%
Small Size Squashes			
Raw	September 5	26.7	6.65
	September 24	23.9	7.28
Blanched	September 5	15.4	6.60
	September 24	22.2	7.28
After 6 months' storage at −6°F.	September 5	18.0	6.23
	September 24	21.6	6.88
Medium Size Squashes			
Raw	September 5	26.7	6.00
	September 24	24.1	6.61
Blanched	September 5	15.1	
	September 24	17.5	6.61
After 6 months' storage at −6°F.	September 5	15.5	6.96
	September 24	16.0	6.36
Large Size Squashes			
Raw	September 5	25.7	6.68
	September 24	19.5	5.82
Blanched	September 5	10.3	5.82
	September 24	12.1	5.82
After 6 months' storage at −6°F.	September 5	11.1	6.48
	September 24	12.5	5.66

* Results expressed on wet weight basis.

RESULTS AND DISCUSSION

The analyses of the small, medium, and large squashes of both varieties showed that the ascorbic acid content was higher in the small vegetables and decreased as the size increased. These data are brought together in Tables 1 to 4. Based on the number of samples examined, it appeared that the amount of ascorbic acid in the vegetable frequently increased as the season advanced, considering equivalent stages of maturity of the vegetable. Although thiamine was studied for one season only, the same trend appeared, but it was not so pronounced as for ascorbic acid.

The Yankee Hybrid variety showed variable losses of ascorbic acid amounting to 50 per cent as a result of the combined operations of blanching and storing. The second season, this same variety showed variable losses of about 35 per cent. The only lot of Zucchini available during 1944 was the large squash, which showed a corresponding loss of 75 per cent. The 1945 samples of this variety showed a corresponding loss of about 50 per cent. The losses of thiamine during the combined operations of blanching and

storing for both varieties amounted to approximately 30 per cent.

The losses of ascorbic acid, especially for the 1944 season, seem rather high, and it is possible that some enzyme other than catalase remained in the tissue after the blanching, thus causing the high losses.

SUMMARY

Two varieties of summer squash—Yankee Hybrid and Zucchini—tended to show a decrease in ascorbic acid and thiamine content with increasing size. Processing and storage losses are given.

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TABLE 4

Ascorbic acid and total solids of Zucchini summer squash grown in 1945, before and after blanching and after six months' storage at −6°F.

CONDITION OF SAMPLE	DATE OF HARVESTING	ASCORBIC ACID*	TOTAL SOLIDS
Small Size Squashes			
		mg./100 gm.	*%*
Raw	September 5	19.3	5.78
	September 24	29.5	6.40
Blanched	September 5	12.5	6.69
	September 24	20.1	6.40
After 6 months' storage at −6°F.	September 5	15.8	7.26
	September 24	12.3	5.44
Medium Size Squashes			
Raw	September 5	11.9	
	September 24	24.8	5.63
Blanched	September 5	7.2	6.60
	September 24	19.8	5.63
After 6 months' storage at −6°F.	September 5	8.3	6.21
	September 24	6.1	4.65
Large Size Squashes			
Raw	September 5	8.9	5.93
	September 24	17.0	5.65
Blanched	September 5	5.1	5.18
	September 24	9.8	5.67
After 6 months' storage at −6°F.	September 5	4.3	5.44
	September 24	6.3	5.91

* Results expressed on wet weight basis.

Woman's Place in the Working World

Women's greatest contributions to the progress of business remain to be made. Possibly the most significant of these contributions will lie in the realm of human relations. In addition to whatever individual or technical ability which a woman brings to a job, she can, and should, exercise a "plus" which is peculiarly hers.

The very *personal* approach that the business woman in the past has taken toward her job has been perhaps both her greatest curse and her greatest asset. The personnel people tell us that she is apt to take her desk work much too hard. She worries over trifles. She carries a chip on her shoulder. She hasn't yet learned man's great secret—that only by knocking off from work occasionally can you really dig into it. It has taken her a long time to learn that lesson which men achieved many years ago: that nothing succeeds like conscientious loafing. How often I have seen a woman staying long after hours at the office stewing over something when long before she should have been home cooling over it.

Is not then the greatest new problem, for the majority of women who work, that of how to combine successfully living with business rather than just the specific problems of the job? To achieve a proper balance, every woman—married or single—must live as a whole person creating, producing, and playing.—*Excerpted from an address by Marie Sellers, Director, Consumer Services, General Foods Corporation, given at a luncheon sponsored by the National Federation of Business and Professional Women's Clubs in New York City, commemorating "One Hundred Years of Progress by the Women of This Nation."*

Work Simplification as a Tool of Management[1]

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ONE OF the greatest needs in America today is for better management. If we define management as knowing exactly what we want to do and doing it in the best and cheapest way, then we can readily appreciate that we need more and better management in international and national affairs, in our industrial and social problems, as well as in our everyday personal relations.

The dietitian is interested in supplying this need of better management, particularly as it applies to the preparation and serving of food, because

(a) She is a manager. Management is her function—her responsibility.

(b) She can be a part of the solution to this problem and make a contribution.

(c) She can personally grow in stature in proportion to her accomplishments and to the contribution which she makes.

Work simplification can be one of the dietitian's most important tools as a manager. She has come too far as an executive not to want to use any proved tools that will assist her to go even further.

DEFINITION AND PHILOSOPHY

Work simplification is the organized application of common sense to find easier and better ways of doing work. Work simplification does not stress working harder and faster, but places the emphasis of finding a better way of doing a task by eliminating that part of the job which is useless and unnecessary and which adds nothing to the value of the product. For example, take the simple process of removing your fountain pen from your purse and signing a letter. Normally, you open your purse, then reach for the pen with the right hand, then grasp the cap with the left hand which serves as a holding device, and unscrew the barrel of the pen with the right hand. You then transfer the cap to the other end of the pen, transport the pen to the paper, and sign the letter. The putting-away operation then consists of removing the cap with the left hand, and holding it while you insert the pen with the right hand and turn it. The pen is then transferred to the right hand and returned to the purse and the purse is closed. Can any of the useless motions of that very simple operation be removed or eliminated? Suppose you start with the left hand and remove the pen from your purse with it. Then, placing the right hand on the barrel, use both hands with a simple turn to remove the cap; keep the cap in the left hand, transfer the pen with the right hand to the paper and sign the letter. The pen is then returned to the cap, which is replaced by both hands doing the turning. The left hand then returns the pen to the purse. Thus you were able to eliminate several useless and unnecessary parts of the job.

THE EXPERT APPROACH

Work simplification and method improvement work has been going on since the Stone Age; thus, there is really nothing so new about improving methods. The thing that is new about work simplification is the approach. In the past, the approach has been largely that of the expert—from the top down, telling instead of teaching. A methods expert or engineer worked out an improvement, and then presented it to the operator. The operator, having performed work satisfactorily for a number of years, felt that he know more about it than any outsider. Consequently, when the expert explained how the new method works, the operator didn't listen with an interest and an intention of adopting the improvement. Rather, he was thinking of the reasons (and there are usually many of them) why the new method would not work. When the expert finished the explanation, the operator told him why it would not work. In view of the fact that the success of the project rested with the operator, the chances were that he won the agrument.

RESISTANCE TO CHANGE AND RESENTMENT OF CRITICISM

The expert's approach failed to recognize two traits which are very strong in all of us, namely, the resistance to change and resentment of criticism. It

[1] Presented at the 30th Annual Meeting of the American Dietetic Association in Philadelphia, on October 17, 1947.

is that tenacity in holding on to the things that we are accustomed to that makes progress so aggravatingly slow. History is filled with examples. The people of Boston objected seriously and vigorously to the introduction of the telephone by Joshua Coppersmith, saying "All well informed people know that it is impossible to transmit the human voice over a wire."

Just recently I received a letter from a national food manufacturer and distributor, telling me that a process which we had worked out two years ago for an improved packing operation which would save $25,000 per year was just being placed in operation. The installation could not be made until the foreman died.

Another illustration of resistance to change and resentment of criticism occurred in connection with the rehabilitation of the pneumatic tube system in a large department store when I was in charge of industrial engineering. The manufacturer brought in blueprints of a proposed layout and photographs of installations in other stores. We turned the searchlight of analysis on the plans and came up with a different answer. It was necessary for us to build a mock-up of the dispatching station before we could sell the manufacturer's salesmen. We then experienced difficulty with the manufacturer's district manager and finally had to send an engineer to the home office before the manufacturer would agree to build the dispatching unit the way we wanted it. Although about $4500 a year could be saved by the improved layout, the manufacturer resented our telling him how to build his equipment and stubbornly resisted the change.

These examples are cited because they illustrate that resistance to change and resentment of criticism are two fundamental human traits that have kept methods of work from making greater progress.

YOUR APPROACH SHOULD EMPHASIZE HUMAN RELATIONS

However, by appealing to other basic traits of human nature, management wishing to introduce methods can circumvent this resistance to change and resentment of criticism and procure the enthusiastic support and cooperation of employees. Work simplification is essentially a teaching and training program. Our organization teaches people to use a few of the tools of the industrial engineer that can be used by the average man on the large run of jobs. These tools include an open mind; an inquiring, questioning, and challenging attitude; and the use of a five-step formula for simplifying work.

The employee, when given these tools, backs away from his job far enough to see it as a whole and then works out his own improvement. In so doing, he does not encounter any resistance to change or resentment of criticism, because he is accomplishing something in his own right. With his new knowledge he can work out an improvement. Then, because of the fact that it is his improvement, he is proud of it and makes it work.

BETTER MORALE

An employee who submits a suggestion or a proposal for an improvement and has it adopted feels complimented that his brain power has been recognized and is usable by management. He sticks out his chest, is proud of his accomplishment, and says, "See what I have done!" As a result, his ego is bolstered and he feels that he is making a real contribution to and is part of the organization. This makes him feel important, and the feeling of importance is necessary for the happiness of each of us. With the recognition he has received, his ego not only goes up, but his morale is improved, with the result that he is a much better employee. It is very difficult to estimate or measure the value of the intelligent vigilance of one employee who is interested in his job, over one who is not interested in his job. This is one of the most fundamental ways of increasing productivity by releasing in the individual a desire—a sincere wish—to do a better job. Every man has an inherent desire to do good work. This process we are talking about is a means of releasing that inherent desire, which is, of course, necessary before it can become effective.

The reason for devoting considerable space to this philosophy is that it is the heart of the program. The five-step program for simplifying work is very simple. These steps are:

(a) Pick the job to improve.

(b) Break the job down into detail.

(c) Question and challenge the job and then each detail of the job.

(d) Work out a better method.

(e) Apply the new method.

The process chart[2] is the technique for breaking the job down into detail.

Perhaps we should have adopted the Elmer Wheeler technique of not selling the steak but selling the sizzle; perhaps rather than selling the tools of work simplification, as illustrated by the movie,[2] we should have sold what can be done with those tools. Furthermore, under this technique, we would have avoided the hazard of giving you a five-step pattern, in which you may think you have a work simplification program, only to be disappointed to find out a few months hence that your program is not as successful as you had anticipated.

Work simplification has been operated successfully in many kinds of industry. The principles are applicable to all kinds of business, despite the state-

[2] A moving picture titled "The Flow Process Chart and How to Use It" is available for sale from the Library of Congress. Prepared by A. T. Kearney and Company, it gives details of developing and using this one tool of work simplification.

ment often heard, "Our business is different." The problems of the large department store referred to above *were* different, but a very successful work simplification program has been inaugurated and operated. The savings reported currently are in excess of 600,000 manhours per year. You will agree, I believe, that this is a sizable savings. Even more important than the savings is the effect in morale building. All of the supervisors of this organization feel a little more important—a little more capable than before—and, consequently, as expressed by one buyer, will perform the tasks of the future better than they have ever done before.

Are these savings real? Let us examine the record of the accounts payable section of this department store. The head of this section and his employees had been doing a good job of simplifying their operations by turning in a number of process charts. They became concerned over the amount of the savings which were almost too large to believe. An analysis of their transactions and costs revealed that if they had continued to operate in 1946 at the 1945 unit cost, they would have spent $40,000 more. Only $18,000 of this had been reported through work simplification. The balance may be attributed to increased productivity through improved morale, applying principles of motion economy to new jobs, or it may simply indicate the conservativeness of the predictions regarding savings.

OTHER REQUISITES

In addition to the basic philosophy and a thorough training program, there are five other essentials to a successful program. These include: top management approval, channel of communication, incentive to use the tools, an effective follow-up program, and a determination to keep it in the "line" organization. Space does not permit the discussion of these topics, but if you are interested, you can read more about them in the American Management Association's Bulletin No. 170 of the Production Series, titled *Getting Supervisors' Cooperation on Methods Improvements.*

FACTORS OF GOOD SUPERVISION

Now that we have discussed work simplification generally, let us consider how the dietitian can use it to improve her ability and performance as a manager. There are five factors that constitute good supervision.

The first factor is knowledge of your organization. Process charts enable you to know how transactions are handled, not only in your own division, but in other divisions. They enable you to know who is doing what within your division. When you chart the process, you will be surprised to find that it is considerably different than you expected, and natural leaders in the organization may not be the ones shown on the organization chart. The use of the process chart is one means of learning more about your own division and the whole organization.

The second factor is knowledge of your responsibilities. In a number of training sessions, some high executives have been asked if they knew exactly what their responsibilities were. It was amusing to see the smiles spread across their faces. There is a tremendous area of assumption and indefiniteness. Developing process charts would be one step toward defining this responsibility, because you, as manager, would then know each job that was being performed under your supervision and how it was being performed. The process chart can aid you, therefore, in the second factor of good supervision, namely, knowledge of responsibility.

The third factor is skill in teaching. It is not enough to work out a better method. It is necessary to teach that better method to the operators who are to use it. The principles which you learned under your job instructor training are fundamental and very valuable. The process charts can serve also as a training basis for new employees. The more jobs you improve, the more opportunity you have to develop this faculty of teaching.

The fourth factor is skill in planning. Work simplification in addition to the regular definition might be considered as nothing more than good planning, because what is planning but finding the best and cheapest way to do the job? When you find a better way, you have the additional time for more planning. With such planning you not only find a better way, but the proper utilization of your own time and the time of those that work with you and for you.

The fifth factor is skill in leadership. After you have improved the job and taught the person how to do it, you still have the responsibility for releasing in him the desire to do the job. This is leadership—a sensitiveness to what your people are thinking and an enlightened presentation in terms of their interests, so that you develop in them that inherent desire to do good work.

SUMMARY

Work simplification is a vehicle by which you can become proficient in the five factors that constitute good management.

Above these factors and interwoven throughout is conference leadership which is the best accepted practice for getting ideas over to a group that is familiar with the particular subject.

To every man there openeth a way and ways and a way,
The high soul climbs the high road, the low soul gropes the low,
And in between on the misty flats the rest drift to and fro;
But to every man there openeth a highway and a low
And every man decideth which way his soul shall go.

Work simplification can help you get on the high road of management.

Editorial

EXECUTIVE BOARD ANNOUNCES NEW STAFF APPOINTMENTS

Effective September 1, Mable MacLachlan will become Educational Director for the American Dietetic Association. Miss MacLachlan is our most recent Past-President, having held office in 1946–47, and she comes to the staff of the Association not only with a broad administrative background of work experience, but a comprehensive understanding of Association problems.

Miss MacLachlan graduated with honors in home economics from Michigan State College, East Lansing, in 1918, after which she taught in the Home Economics Department of the high school in Sault Ste. Marie, Michigan, her home. In 1925, she took hospital dietetic training at the University of Michigan Hospital, Ann Arbor. At the end of her course, she was appointed to the staff where she remained for four years. During this time she served as ward supervisor, taught student nurses, and managed the commercial cafeteria. From there she went to Michigan State Teachers College in Ypsilanti to teach foods and nutrition.

Later Miss MacLachlan entered Columbia University to do graduate work and received a Master of Science degree. On completion of this academic work, she returned to the University of Michigan Hospital as Administrative Dietitian in charge of food production, and since 1934 she has been Director of Dietetics and Housekeeping. In this capacity, she has also been the director of the hospital's approved course for dietetic interns and has trained some 300 dietitians. This phase of her experience, especially, should prove of much value to her as Educational Director, both in her trips to review approved courses and in helping and advising with course directors.

As A.D.A. President, President-Elect, and Treasurer, Miss MacLachlan has held three of the major administrative positions on the Executive Board of the Association, an experience which should also serve her in good stead in her new position.

A second new appointment to the headquarters staff of A.D.A. has been announced—that of Ruth Jubb, who will serve as Assistant to the Executive Secretary. Miss Jubb comes to the Association office with a well rounded experience, having graduated from Michigan State College in East Lansing in 1940, and a year later completing an approved dietetic internship at St. Louis University Hospitals. She has had experience as Therapeutic and Head Dietitian at Deaconess Hospital, Detroit, and as the only dietitian at the Little Traverse Hospital, Petoskey, Michigan. During the war, Miss Jubb served as First Lieutenant in the Army and was stationed at the Station Hospital, Camp Patrick Henry, Virginia. Since her separation from service, she has been employed in Chicago and Oklahoma City by Sky Chefs, an airline food service. In this work she supervised the preparation and packing of meals for planes and service in airport restaurants, planned menus, and assisted with food purchasing. As Assistant to the Executive Secretary, Miss Jubb's main responsibilities will be in connection with the work of the Placement Bureau.

PLANS OF FORMER A.D.A. STAFF MEMBERS

In June, 1946, Virginia F. Harger accepted the first appointment as Assistant to the Executive Secretary for the Association. For the past two years, Miss Harger has worked diligently on Placement Bureau problems. On her shoulders has fallen much of the brunt of the shortage of dietitians. In her position, Miss Harger has had to tell many employers that dietitians were not available and at the same time encourage these employers to continue to want the services of qualified dietetic personnel. She has given graciously of her time in counseling members and in assisting them in numerous ways.

It was with regret that Miss Harger's resignation was accepted. When the fall session begins at Ohio State University, Miss Harger will be Assistant Professor of Institution Management in the School of Home Economics. During the summer, she plans to take work in food cost accounting at Teachers College, Columbia University.

A second loss to the A.D.A. staff occurred when Mrs. Marguerite Paplow resigned the position of Assistant to the Educational Director on June 1. She has accompanied her husband, John Paplow, to Berkeley, California, where he will serve an internship in hospital administration at Herrick Memorial Hospital. He completed his academic work in hospital administration in June at Northwestern University.

Mrs. Paplow's responsibilities entailed primarily work with membership applications of the Association. As the first appointee to this particular position, she organized many of the procedures which require detailed work on collecting of references, evaluating transcripts of credits, and summarizing data for action by the Membership Committee. Mrs. Paplow gave unstintingly of her time and was of great assistance to Lucille Refshauge, former Educational Director, and other members of the staff as well as to the Secretary of the Association.

Both Mr. and Mrs. Paplow are looking forward to the year they will spend in California. Mrs. Paplow expects to be active in dietetic circles in the Bay Area, and Mr. Paplow anticipates a stimulating experience at Herrick Memorial Hospital, which is, incidentally, the first hospital to make available helicopter air-sea rescue service.

Members of the Association will join the Executive Board and staff in extending their very best wishes to both Miss Harger and Mrs. Paplow.

NEW ENGLAND INVITES

Each month as plans progress for the 31st Annual Meeting of the American Dietetic Association to be held in Boston from October 18 through 22, more stimulation and pleasure are promised for dietitians planning to come "down East." The work of the Boston dietitians serving on the Trips Committee indicates the enthusiasm with which activities are being planned.

In the June issue of the JOURNAL, possible routes to and from Boston were suggested. The following tentative schedule of trips in and around Boston itself should serve to tantalize dietitians, for the itineraries truly read like the folders of travel bureaus and agencies.

Pre- and post-convention trips out of Boston are being planned for those dietitians who arrive early and are not scheduled to attend meetings before Tuesday, October 18. Pre-convention trips may be taken on October 16, 17, and 18, while post-convention sightseeing may be enjoyed on October 23 and 24.

Pre-convention jaunts to Connecticut and Rhode Island are on the schedules. On Saturday and Sunday these trips to adjoining states and cities will include visits to hospitals, clinics, college Commons, and historic trips. Since they cannot take in school lunchrooms and industrial feeding operations, the trips for Monday, October 18, will be especially planned to feature such organizations.

Following the convention, week-end trips to the mountains of New Hampshire and Vermont and also to Maine are being planned for Saturday and Sunday, October 23 and 24.

Other one-day and part-day sightseeing trips from Boston are listed below.

ALL-DAY-TRIPS

(Leave at 9:30 A.M., return about 6:30 P.M.)

1. Historic Plymouth and Cape Cod. Stops will be made en route at Adams Mansion, Pilgrim Hall, Forefathers' Monument, Burial Hill, and Plymouth Rock.

2. North Shore. This trip will include old Marblehead, the birthplace of the American Navy with its narrow cobblestone street and old houses, including the Molly Pitcher House; quaint and historic Salem, the "Witch City" with its old Witch House and Gallows Hill; and Gloucester, reached just after passing Norman's Woe, made famous by Longfellow. In Salem, too, will be found the House of Seven Gables and the Pioneer Village, as well as the famed colonial doorways on Chestnut Street. Gloucester is one of the largest fishing ports in the world, and dietitians taking this trip will have an opportunity to visit the fisheries.

3. New Hampshire Coastline. On this trip, the sightseer will travel up along the rockbound coast of Maine to Kennebunkport, the home of many noted authors, including Booth Tarkington, Kenneth Roberts, and Margaret Deland.

SHORT TRIPS

4. Historic and Modern Boston—1½ hr. Leaving at 11:00 a.m., 1:30 p.m., and 3:00 p.m., this trip may be sandwiched in between other activities. Stops will be made at Bunker Hill Monument, the Navy Yard, Paul Revere House, and the Frigate *Constitution*—"Old Ironsides."

5. Educational Boston and Cambridge—1¼ hr. This excursion will leave at 12 noon and at 3:00 p.m. One of the high spots will be the Ware Collection of Glass Flowers at the Agassiz Museum, Harvard University in Cambridge.

6. Lexington and Concord—3 hr. Trip leaves at 1:30 p.m. Dietitians who take this trip will see the birthplace of American liberty. The route follows that made famous by Paul Revere on April 19, 1775, and, in addition, includes the homes of some of New England's and America's foremost authors—Longfellow, Lowell, Hawthorne, Louisa May Alcott, and Emerson.

7. Historic Wayside Inn, South Sudbury, Massachusetts. This famous eating place of today was originally a stage coach inn and was brought to the limelight by Longfellow in his *Tales of a Wayside Inn*. Restored by Henry Ford, today many of the original pieces used when it was an inn may be seen in their original settings, including the pewter and wooden utensils in the old kitchen. Nearby is the Little Red Schoolhouse of Mary-had-a-little-lamb fame, which visitors will not want to miss.

8. Combined tours. All four of the above short trips may be combined as an all-day tour starting

at 9:00 a.m., or the three trips to Educational Boston and Cambridge, Lexington and Concord, and Historic Wayside Inn may be combined for a half-day trip starting at 11:00 a.m. A third possible combination is that of the tour to Lexington and Concord and to Historic Wayside Inn which would take only an afternoon, starting at 1:30 p.m.

FIELD TRIPS IN AND OUT OF BOSTON

For Monday and Saturday mornings before the convention, field trips to clinics (for limited numbers only) and public health agencies are planned. Trips on Monday morning will also include school lunchrooms and college Commons.

Hospital trips will be made on Saturday following the convention.

During convention week, early morning and late afternoon sightseeing arrangements, which will not interfere with scheduled meetings and meal functions will be made. These will take in the markets, fruit and vegetable auctions, Fish Pier, the fish industries in Gloucester, a baked bean and bakery plant, the Cape Cod cranberry industries, testing kitchens, research laboratories, hotels, restaurants, and industrial cafeterias, school lunchrooms, and New Haven Railroad dining cars.

Plans for meetings are also progressing apace and give promise of providing one of the most stimulating professional meetings which the American Dietetic Association has ever enjoyed. Sessions on diet therapy, public relations, community nutrition, professional education, history of nutrition, and food administration, including an address by an architect on layout, will all be on the calendar of events, as well as enjoyable meal functions.

The promise of stimulating meetings, plus the lure of the trips described above, should serve to entice dietitians to make definite plans *now* to attend the 31st Annual Meeting. Write to the Housing Bureau, Boston Chamber of Commerce, 80 Federal Street, Boston 10, for room reservations.

REPORT OF THE NOMINATING COMMITTEE, AMERICAN DIETETIC ASSOCIATION, 1947–48[1]

The Nominating Committee of the American Dietetic Association—Alta B. Atkinson, Anna de Planter Bowes, A. June Bricker, Janet Engebretsen, and Mable MacLachlan, Chairman—presents the following ballot for 1948–49:

President-Elect

Elizabeth Perry: B.S., Kansas State College, Manhattan.

Positions held:
- Assistant Dietitian, Buffalo City Hospital, Buffalo, New York
- Manager, Russet Cafeteria, Cleveland, Ohio
- Chief Dietitian, Cunningham Sanatorium, Cleveland, Ohio
- Chief Dietitian, Cleveland City Hospital, Cleveland, Ohio
- Present position—Chief Dietitian and Assistant Superintendent, City Hospital of Cleveland, Cleveland, Ohio

Professional activities:
- Vice-President, A.D.A.
- Chairman, House of Delegates, A.D.A.
- Co-Chairman, Public Relations Committee, A.D.A.
- Chairman, Reorganization Committee, House of Delegates, A.D.A.
- Member, House of Delegates, A.D.A.
- Member: Review Committee on Reorganization, Nominating Committee, Constitution and By-Laws Committee, Committee on Food Cost Accounting in Small Institutions, A.D.A.
- President, Ohio Dietetic Association
- President, Cleveland Dietetic Association
- President, Cleveland Home Economics Association
- Chairman, Dietary Committee, Cleveland Hospital Council

Publications:
- Articles in this JOURNAL, *Modern Hospital*, and *Hospitals*.

Vice-President

Grace Bulman: Diploma, Drexel Institute; B. S., Columbia University

Positions held:
- U. S. Army Hospital Dietitian, World War I
- U. S. Public Health Hospital Dietitian
- U. S. Veterans Hospital Dietitian
- Chief, Dietetic Section, Medical Division, U. S. Veterans Bureau, Washington, D. C.
- Present position—Chief, Dietetic Division, Department of Medicine and Surgery, Veterans Administration, Washington, D. C.

Professional activities:
- Chairman, Food Administration Section, A.D.A.
- Member, Committee on History of Dietetics, A.D.A.
- President, District of Columbia Dietetic Association
- Treasurer, District of Columbia Dietetic Association
- Liaison Representative for Veterans Administration to the Food and Nutrition Board, National Research Council

Marjorie Hall Siler: B.S., Battle Creek College, Battle Creek, Michigan

Positions held:
- Assistant Dietitian, Cincinnati General Hospital, Cincinnati, Ohio
- Director, Dietary Department, Cincinnati General Hospital, Cincinnati, Ohio
- At present—homemaker

Professional activities:
- Convention Chairman, A.D.A.
- Chairman, Vocational Guidance Committee, A.D.A.
- Member, Public Relations Committee, A.D.A.
- President, Ohio Dietetic Association
- President, Cincinnati Dietetic Association

Secretary

Margaret A. Ohlson: B.A., State College of Washington, Pullman; M.S., Ph.D., University of Iowa, Iowa City

[1] Details concerning provision for making other nominations are stated in Article V, Section 6, of the By-Laws of the Association, as adopted October 26, 1944.

Positions held:
Cafeteria Director, Y.W.C.A., Salt Lake City, Utah
Executive Dietitian, Washington Veterans Home, Retsil, Washington
Therapeutic Dietitian, Sacred Heart Hospital, Spokane, Washington
Instructor in Nutrition, Indiana University Hospitals, Indianapolis
Assistant Professor, Department of Foods and Nutrition, Michigan State College, East Lansing
Associate Professor, Department of Foods and Nutrition, Iowa State College, Ames
Present position—Professor and Head, Department of Foods and Nutrition, Michigan State College, East Lansing

Professional activities:
Member, Membership Committee, A.D.A.
President, Iowa Dietetic Association
Secretary, Michigan Dietetic Association
Editor, Omicron Nu Journal
Member: Iowa Nutrition Committee, Michigan Nutrition Committee, North Central Committee on Conservation of Nutritive Value of Foods, North Central Committee on Nutritional Status

Publications:
Author—*Laboratory Handbook for Dietetics*
Eight papers in this JOURNAL and articles in ten other professional publications.

E. Evelyn Smith: B.S., M.A., Teachers College, Columbia University, New York City

Positions held:
Dietitian, Crouse-Irving Hospital, Syracuse, New York
Dietitian, Allegheny General Hospital, Pittsburgh, Pennsylvania
Instructor in Household Science, Macdonald College, McGill University, Quebec, Canada
Assistant Professor, Department of Home Economics, Pennsylvania State College, State College, Pennsylvania
Associate Professor and Chairman of Divisions, Institution Management, University of Illinois, Urbana

Professional activities:
Member, Placement Bureau Board, A.D.A.
Member, House of Delegates, A.D.A.
Member, Nominating Committee, Membership Committee, War Activities Committee, Foreign Scholarship Committee, By-Laws Revision Committee, A.D.A.
Vice-President, Illinois Dietetic Association

Nominating Committee

The following candidates (five of whom are to be elected) for the Nominating Committee for 1948–49 have been selected as representatives of special fields of interest in the profession:

Margaret Cowden Bernard: B.S., University of Nebraska, Lincoln. Present position: Chief, Dietetic Division, Veterans Administration Branch No. 13, Denver, Colorada; President-Elect, Colorado Dietetic Association.

Lucile K. Billington: B.S., M.S., University of Wisconsin, Madison. Present position: Senior Nutritionist, Wisconsin State Board of Health, Madison.

Marion D. Floyd: B.S., Simmons College, Boston. Present position: Chief Dietitian, Massachusetts General Hospital, Boston.

Helen A. Hunscher (Mrs. H. P. Wilkinson): A.B., Ohio State University, Columbus; Ph.D., University of Chicago. Present position: Professor and Head, Home Economics Department, Western Reserve University, Cleveland, Ohio; President, American Dietetic Association.

Doris Johnson: M.S., University of Wisconsin, Madison. Present position: Ward Supervisor and Teaching Dietitian, Presbyterian Hospital, New York City.

Bertha Nettleton: B.S., Teachers College, Columbia University, New York City. Present position: Product Representative, Institution Products, Consumer Service Department, General Foods Corporation, New York City.

Elizabeth E. Starr: B. Educ., University of California, Los Angeles. Present position: Administrative Dietitian, Harbor Hospital, Los Angeles County Department of Charities, Torrance, California.

Margaret E. Terrell: B.A., Penn College, Oskaloosa, Iowa; M.A., University of Chicago. Present position: Director of Dining Halls, University of Washington, Seattle.

Marjorie J. Wood: B.S., New York State College for Teachers. Present position: Senior Dietitian; Chief, Dietetic Section, Hospital Division, U. S. Public Health Service, Washington, D. C.

Utilization of Ascorbic Acid

With the advent of vitamins in chemically pure form, the question has naturally arisen regarding the comparative nutritive value of the natural versus the synthetic forms of vitamins. Not only has there been presumptive superiority of certain of the vitamins as they occur in natural fruits and grains, but a recent report describes the considerably greater vitamin C (ascorbic acid) potency of natural and fortified orange juices when assayed by the dental biologic assay than could be accounted for by the ascorbic acid determined therein by quantitative chemical analysis. Melnick and his co-workers have thrown light on this general problem by re-examining the comparative stability of ascorbic acid in aqueous solution and in apple juice. Under controlled conditions of hydrogen ion (*p*H) and initial concentration, the vitamin C in apple juice is far more stable when stored at high summer temperature conditions. However, when the availability to the organism and the influence on the response to test doses of ascorbic acid was studied in human subjects, there was little if any difference in the behavior of the agent administered in water or that given in apple juice. Not only can apple juice be safely fortified with vitamin C, but also synthetic ascorbic acid administered for therapeutic purposes is absorbed and utilized by the body as well as that from natural sources.—*From Current Comment, J.A.M.A. 136: 402 (February 7), 1948.*

Current Comment

DAMAGING EFFECTS OF OVEREATING[1]

DWIGHT J. INGLE

Research Laboratories, The Upjohn Company, Kalamazoo, Michigan

Are the unfavorable effects of overeating related to the level of caloric intake *per se* or are they more closely related to the degree of obesity? Innumerable questions can be raised regarding the nature of the association between obesity and disease.

The normal human has the capacity to assimilate much larger amounts of food than are needed to meet the usual requirements for growth and energy. The excess is stored, principally as fat. Overweight people have a higher-than-average incidence of metabolic, digestive, and circulatory diseases and consequently a shorter-than-average life expectancy. The development of obesity is related to the level of total energy output as well as to the level of food intake. Thus, an individual having a high energy output can tolerate a high caloric intake without the accumulation of fat, whereas a second individual on the same high caloric intake would become obese because of physical inactivity.

The problems of overfeeding have been little studied in the laboratory. This is in contrast to the extensive investigation of the problems of underfeeding. Methods for the systematic overfeeding of experimental animals have been lacking. Certain species of domesticated animals overeat, and much of the science of animal husbandry has been directed towards increasing the rate at which poultry, cattle, and swine accumulate weight. Progress has been made through improved nutrition and through selective breeding resulting in reduced voluntary activity and improved efficiency of food utilization.

In a series of studies upon the so-called "adaptation diseases" as produced experimentally in the rat, Selye (1) has shown that their occurrence is favored by a high level of protein and of sodium chloride intake.

In the sub-totally depancreatized, non-diabetic dog, Allen (2) observed the subsequent development of diabetes and degeneration of the pancreatic islets in those animals given a high caloric intake. Lukens (3) has reviewed the evidence that the maintenance of an abnormally high level of blood glucose favors the development of diabetes. Dohan and Lukens (4) have recently added to their series of beautifully conceived and executed studies by producing permanent diabetes in the normal cat by the parenteral administration of glucose in amounts which sustained hyperglycemia for several weeks. Although these results can be otherwise interpreted, they provide the best evidence thus far advanced from the laboratory in support of "islet over-work" as a factor in the etiology of diabetes.

Reinecke, Ball, and Samuels (5) have developed a method for the forced feeding of rats by a stomach tube. Ingle (6) used this procedure for the production of alimentary glycosuria in the rat. Normal males were force-fed a high carbohydrate diet with different rates of increment in amount until the death of each animal. Very large amounts were tolerated by each rat before the development of glycosuria. After the limit of tolerance was exceeded, each rat excreted significant amounts of glucose. The maximum amount of glucose excreted by any rat within a 24-hr. period was 10.5 gm. At necropsy a few gross pathologic changes were seen in these obese animals. The adrenal cortices were enlarged, and the thymus was atrophic. The seminal vesicles were atrophic, and the testes were smaller than normal and were soft and flabby. The collateral changes in the structure and chemistry of tissues which result from overfeeding have not been studied. The gross changes observed in these studies are characteristic of any type of stress and may be non-specific. However, these changes in the reproductive organs of the overfed animals may be considered in relationship to the hypogonadism sometimes observed in obese patients, especially as manifest by amenorrhea in the female. It is likewise of interest that fattened show cattle not infrequently show sterility.

Following the experimental production of lesions in the hypothalamus, rats may develop voluntary hyperphagia and, consequently, marked obesity. Brobeck, Tepperman, and Long (7) have described the autopsy findings of rats made obese by this procedure. The urine contained casts and red cells and significant amounts of albumin. The kidneys showed chronic glomerulonephritis, and there was regression in the size of the ovaries.

[1] Received for publication July 18, 1947.

The question has been raised as to whether the pathologic changes associated with overeating are due to the high caloric intake *per se* or to some obscure type of dietary deficiency which appears more readily in animals which overeat. Ingle (6, 8) has observed vitamin K deficiency in rats which were overfed a high-carbohydrate diet, although no symptoms appeared in similar animals on the same diet when the caloric intake was normal. The symptoms were completely relieved by the addition of vitamin K to the diet. Changes in the basal requirements for the accessory food factors in relation to the proportions of fat, protein, and carbohydrate in the diet and in relation to the level of total caloric intake are well known phenomena.

Another related problem has to do with pathologic changes caused by a sudden change in diet when adaptation is prevented. Damage can be caused in forced feeding experiments by giving a normal caloric intake to animals which have not previously been force-fed (9), to fasted animals (10), or by a sudden shift between isocaloric high-fat, carbohydrate and fat diets. These sudden changes in feeding cause a syndrome which Ingle (9) has termed "food shock." It may result in the death of the animal. If the changes are made gradually so that adaptive mechanisms have time to operate, no symptoms appear. It is a common experience for humans to be made ill by foods to which they are not accustomed. Similar observations on animals are well known in veterinary medicine. May some of the causes of indigestion in patients be based upon the same mechanisms which result in "food shock" in animals?

A consideration of these scattered and generally superficial observations of the damaging effects of overfeeding permits no definite conclusions regarding the full extent of damage or the mechanisms involved and does not clarify the relationships of obesity and overeating to human diseases. It does, however, indicate a profitable field for investigation for which useful methodology has already been developed.

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PRINCIPLES OF THE BIOLOGIC EVALUATION OF PROTEIN[1]

ERICH SACHS, M.D. AND REUBEN L. LARSEN, M.D.

By ascertaining the degree of utilizability of a food, its nutritional usefulness can be determined, and food values can be compared on this basis. There are at least three ways of expressing utilizability numerically:

(a) Since food is composed of constituents some of which are nutrients and some are not, utilizability may be stated as the weight fraction of utilizable nutrients contained by the food article.

(b) Utilizability may be defined as the ratio between the amount of nutrient utilized and that absorbed.

(c) A more comprehensive measure of utilizability is the ratio between the amount of nutrient utilized and that ingested. This ratio approaches closely the desideratum of a useful comparison of food values, because it takes into consideration all the aspects of nutrition: availability to the digestive juices, digestibility, availability for absorption, special conditions within the organism which control transportation of the nutrients to the tissues, and cellular metabolism (1).

Since the utilization of protein, in all of its aspects, has been studied with particular thoroughness, the discussion which follows will be focused on this basic nutrient.

DEFINITION OF BIOLOGIC VALUE

The original concept of biologic value was based upon the observation that the nutritional usefulness of protein depended upon its source. For example, the nutritional usefulness of milk, meat, and egg protein was found to differ radically from the protein of gelatin. It is quite different with the other two basic nutrients, fat and carbohydrate, for the nutritional usefulness for neither of these appears to depend upon the source. No essential difference exists nutritionally between starches from corn, rye, wheat, rice, and potatoes, or between sugar from cane or beets, or between animal-derived and plant-derived fats.

In order to compare the nutritional value of different proteins, a standard of comparison was

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devised, by means of which the value of protein from various sources could be measured. This standard, called the "biologic value," indicates the nutritional usefulness of a protein.

CRITERIA OF USEFULNESS

The term "usefulness" requires qualification; it must refer to some biologic effect common to all proteins. Only such an effect can serve as a basis for quantitative comparison. Hence, a choice must be made between the various ways in which protein is utilized in the organism.

All proteins may be used for fuel, just as fats and carbohydrates are. If, however, the caloric value were used as a standard of comparison, it would preclude evaluation of the specific function of protein which is not interchangeable with either fat or carbohydrate. Such a criterion would also conceal the specific differences between various types of protein.

The specific function of protein—the part it plays in cellular and tissue structure—refers to its role in various manifestations of life, such as body maintenance, somatic growth, tissue regeneration, cell repair, and reproduction. Equally important is its role as a constituent of the non-cellular components of the body, such as blood plasma, enzymes, hormones, antibodies, and so forth.

METHODS OF MEASURING BIOLOGIC VALUE

Ignoring its fuel-supplying aspect, the biologic value of protein utilizability may be expressed in any of several ways:

(a) As replacement value in body maintenance, indicating the contribution of a given protein toward maintenance of nitrogen equilibrium in the adult. In this case, the biologic value is expressed as nitrogen (protein-derived) retained in per cent of nitrogen absorbed (balance-sheet method) (2).

(b) As a measurement of the weight gain in grams for each gram of protein ingested by a young animal over a specified period (growth method) (3).

(c) As a measurement of regeneration in certain tissues or organs under the influence of different proteins in the diet (regeneration of liver protein [4] or hemopoiesis [5], for example).

(d) As a measurement of the contribution of different proteins to the regeneration of blood plasma (6) as a whole, or to the formation of such plasma constituents as the gamma globulins which are credited with antibody functions (7).

There may be other equally useful methods for indicating biologic value. In view of the multiplicity of "yardsticks," a problem arises. Do the various yardsticks measure in identical units? Does each method represent "the" biologic value, and is it as good as any other? Can any one method in particular claim that it alone represents "the" biologic value? Or, are there several biologic values —perhaps as many as there are methods for measuring them?

TYPES OF BIOLOGIC VALUE

All of the physiologic functions to which proteins contribute are equally important from the biologic standpoint. Health and life itself are in danger when plasma protein regeneration, hemoglobin synthesis, liver tissue repair, nitrogen balance, or somatic growth are seriously impaired or suppressed. From this viewpoint, one of these functions serves as well as another as an indicator of biologic value.

If the protein function were identical in each of these manifestations of life, one could expect that any given protein, tested for its biologic value for maintenance by, for example, the balance-sheet method, would yield an identical value when measured by the growth method. This, however, is not the case.

Another objection to the concept of an overall biologic value arises from the following observation: When different proteins are studied by the same method, for example, the balance-sheet method, they can be ranked in a certain order according to the numerical rating of their biologic values. The same series of proteins, when rated for their biologic values in blood plasma regeneration, must be regrouped, some to be promoted, others to be demoted. Although a general parallelism apparently does exist between the hemopoietic value of a given protein and its value in supporting somatic growth (at least in the rat) (5), such agreement does not render the biologic value measured by these functions any more representative than that of other methods.

METHODS FOR COMPARING BIOLOGIC VALUE

For these reasons, it is obvious that there is no such a thing as "the" biologic value of a protein; there are sundry biologic values for every protein, though this number is smaller than the number of methods and functions used for measuring. As a consequence, when the biologic values of proteins are to be compared, no valid comparison can be made unless the values are determined by the same method. In order to qualify as "the same method," the procedure must submit to the following restrictions:

(a) The biologic values obtained for a given protein are limited to the animal species in which they are determined. There may be many metabolic similarities between rat, guinea-pig, dog, and man, but there are also important differences which rule out simple transference of animal-derived values to man.

(b) The degree of utilization—the biologic value—differs for a given protein, even when the same method and the same species are used, in inverse

ratio to the protein level in the total daily food intake. It tends to increase with a lower protein level and to decrease with a higher protein level. Therefore, a comparison between the biologic values of different proteins is valueless unless identical protein levels are maintained in the animals used.

If, instead of biologic value, a derived term, such as "net protein value" (8), is used, the result is further influenced by the inconstancy of digestibility for a specific protein. Absorption appears to depend upon the protein level in the ration, and digestibility is depressed by the presence of indigestible carbohydrates in the diet.

AMINO ACIDS—FACTORS WHICH DETERMINE BIOLOGIC VALUE[2]

So far, consideration has been given only to conditions under which a highly restricted, yet useful, standard of biologic values of proteins can be obtained. This approach does not indicate what factors in food-proteins determine their biologic values in a given species for a particular function.

All proteins consist of amino acids. Approximately twenty-two of these are known to occur regularly in both the animal- and plant-proteins. All proteins consist of a certain number of these amino acids. They may contain the same assortment in different ratios, or they may contain different assortments.

An important biologic factor divides the twenty-two amino acids into two groups. Those of the first group (ten in the growing rat [10], probably eight in man) must be supplied as such in the food, because the organism is unable to synthesize them. They are indispensable or essential food constituents. If a single one is missing, nitrogen balance becomes negative, and life will eventually cease.

The amino acids of the second group, although just as essential to the organism, can be synthesized within the body, with the help of the indispensable amino acids and, therefore, need not be present as such in the food.

Reduced to its simplest terms, the nutritional value of a protein corresponds roughly to the completeness of its assortment of essential amino acids, other things being equal. With the growing rat as the test animal and whole egg protein as a standard, an approximate determination of the biologic value of a protein can be made when its maximal percentage deficit of an essential amino acid is known (8).

[2] Since the term "biologic value" enjoys general familiarity, it was preferred to the "net protein value" (originated by Mitchell) which represents the product of digestibility and biologic value and is actually a much better indicator of the true nutritional value of a given protein food (9).

AMINO ACID COMPOSITION AS CRITERION OF BIOLOGIC VALUES

The biologic value of a protein can thus be expressed in terms of amino acids. When, for instance, hemoglobin is synthesized, tryptophane, tyrosine, arginine, histidine, and lysine (the composing amino acids) occur in the molecular ratio of 2:3:3:8:9, respectively (11). This ratio seems to be common to all mammalian hemoglobin. Hence, a protein may be expected to possess the same biologic value in hemoglobin synthesis for all mammals, depending upon its capacity for making the amino acids available in the ratio required.

Other vital functions, such as growth, repair, maintenance, plasma protein regeneration, and so on, require different ratios and different assortments of amino acids. Some of the essential amino acids are in heavy demand by many parts of the organism, and competition for them is particularly keen. Allocation of scarce material is flexible within certain limits; when the supply is sparse, the demand for growth tends to be neglected in favor of maintenance.

The biologic value of a complete protein (one containing all the indispensable amino acids) is determined by the demand for that essential amino acid which is present in the smallest amount. The nutritional usefulness of a complete protein can materialize only to the extent permitted by the limiting amino acid. This restriction may be significant when the daily protein requirement is derived from a single source. To overcome the danger of deficiency in such a situation, the total amount of this "sole source protein" must be great enough to supply the limiting amino acid (or acids) in adequate quantities. This may, of course, lead to a great waste of non-limiting amino acids.

Such a situation is routinely created in the standard procedure for experimental determination of the biologic values of proteins. In these investigations, the proteins to be tested serve either as main or sole sources of protein and constitute the only variable factor in otherwise identical feedings.

COMPLETE AND INCOMPLETE PROTEINS AS DIETARY SOURCES OF AMINO ACIDS

In human nutrition, protein is derived from various sources supplying complete as well as incomplete proteins. Experience has shown that amino acids are equally well utilized in the organism whether derived from a complete or an incomplete protein, from the plant or the animal kingdom, from a natural or a synthetic source.

Theoretically, it seems possible to build from incomplete proteins a diet containing all essential amino acids in amounts adequate to satisfy the daily requirements. The only condition is mutual supplementation of the contributing incomplete proteins; one or more essential amino acids lacking in one must

be supplied by another. A complete protein in such a diet appears to be an additional safety measure rather than a necessity. This assumption, however, does not appear to do complete justice to the true significance of biologically complete protein in the diet.

Newer findings made by feeding gelatin and casein as sole sources of protein indicate "that a diet high in protein, but of poor quality, may be much more deleterious than a diet low in protein, but having a fairly well balanced amino acid composition" (12).

"Balanced composition" appears to gain a new aspect. Customarily a dietary is considered adequate when it supplies daily the nutrients suggested by the National Research Council in the Recommended Dietary Allowances. No consideration is given to the possible influence of time. Such an influence, however, may be an important factor in utilization of amino acids (13).

Rats recover lost weight rapidly when their diets provide the ten indispensable amino acids instead of protein in the form of food and are adequate in every other respect. The animals, however, fail to recover lost weight when the diet is changed in just one respect—if the ten amino acids are not provided at once, but at alternating hourly intervals, only five being offered at one time.

Evidently, simultaneous absorption of the essential amino acids is required for efficient utilization. This fact emphasizes the value of biologically complete proteins in combination with incomplete proteins in the dietary as a means of assuring both balanced composition and absorption.

CONVERTING PROTEIN OF ONE BIOLOGIC VALUE TO ANOTHER

Accurate knowledge of the numerical value of the nutritional usefulness of protein is desirable in a field closely linked to human nutrition—animal feeding. The efficiency of animals in converting feed protein into their own type of protein is an important consideration. Customarily, efficiency of conversion is expressed as yield of animal protein in per cent of feed protein (14). This mode of calculation is justified when the feed protein is derived from sources such as grass, in which the protein is unsuitable for human nutrition. But when, for example, hogs are fed corn, the mere percentage evaluation of the yield is incomplete. Corn protein represents a definite biologic value of 60, let us say, according to the balance-sheet method. Pork protein represents a biologic value of approximately 80, according to the same method. Merely indicating grams of pork protein produced per 100 gm. of corn protein feed fails to reveal the upgrading of corn protein into pork protein.

It would, therefore, appear advantageous to apply a specific "conversion factor" in addition to the per cent calculation, whenever conversion from one protein into another of different biologic value must be determined.

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NATIVE FOODS OF THE WESTERN HEMISPHERE

T. SWANN HARDING

Not only were there interesting human aborigines in the Western Hemisphere when colonization first began, but the New World also offered European man a group of singularly interesting and useful plant and animal species. When it comes to food gifts from the Americas, our minds rarely get beyond Indian maize or corn and the miscalled Irish potato. The latter was derived from a line of highly poisonous plants, and the former from some wild plant as yet unknown. Both are impressive monuments to the genetic skill of the American aborigines. Indeed, corn was already so far developed when Europeans came to this continent that the plant could no longer maintain its existence without man's aid in releasing and replanting the seed.

But in considering the food gifts of the Americas, did you ever think of a nice tasty dish of roast guinea pig, or of bread pudding, and intoxicating beverages produced from the root of the manioc?

GUINEA PIGS

The domestic cavy or guinea pig originated in the Western Hemisphere and is a rodent. (It is not as prolific as it has the reputation of being.) The fact that it reacts to serums, anti-toxins, and the absence of ascorbic acid quite like human beings has opened up for it a wide field as an experimental animal.

However, the South American natives were far more elemental and still are. They simply kill the animal, scald it, scrape off the fur, spread the flesh out flat, and either roast or fry it whole. The dish is considered a great delicacy in the high country of Bolivia and Peru. It is served with a sauce, *picante*, which is made from a small, hot pepper that is also an American native.

This delightful dish can be purchased prepared with sauce in shops called *picantes*. In Ecuador, roast guinea pigs, or cavies, are even sold to train travelers at station stops. Soon after the conquest, the dish was also introduced into the Spanish diet and thence it journeyed to other parts of Europe, even to the British Isles, and finally, like white potatoes, returned to the New World.

At that time cavy clubs and associations sprang up in the United States. Guinea pigs were bred for uniformity of coat type and color pattern and were exhibited in pet stock shows. From the earthen floors and windowless huts of the Andean natives, the cavy followed a long and varied path to become food, pet, and experimental animal.

MANIOC OR CASSAVA

By comparison, manioc is neither so interesting nor so colorful. Known also as cassava and mandioca, it is a ranking foodstuff for millions who live in the tropics; yet, as such, it is virtually unknown in the temperate zone. In the processed form of tapioca, however, it has long since made the acquaintance of American housewives. In Europe, also, manioc flour is made into easily digested biscuits and crackers, and in some parts of our South cassava is used for cattle feed.

Latin Americans bake it into bread, boil it, and serve it like potatoes, or prepare from it thick and authoritative intoxicating beverages. Brazil is conceded to be the home of the plant, and the Spaniards on arrival found edible varieties under cultivation. Botanically, the somewhat shrubby plant is related to the castor-bean, Hevea rubber, and the poinsettia. It grows well with either limited or profuse rainfall. The roots contain a deadly glucoside, which is closely akin to hydrocyanic acid. It may be removed by heating and pressing out the juice, but no one knows how many natives died to learn this. Even the pressed root juice is processed and made into a condiment called *cassareep*.

SWEET POTATOES

Next, there is the sweet potato, related neither to the ordinary white potato nor to the yam. It is called *camote* or *palata* in the tropics, but also grows well in the temperate zone. Columbus found the Indians growing the crop in Cuba, and it was early carried to Spain and on to England, arriving before the true potato. Virginia settlers were cultivating it by 1610.

Actually, it is a member of the morning-glory family and bears white, yellow, or purple flowers resembling morning-glories. The edible "potatoes" develop on its roots. These tubers are rich in provitamin A, thiamine, riboflavin, calcium, magnesium, sulphur, iron, fats, and protein. The ascorbic acid content equals that of the tomato and as a source of carbohydrate, the sweet potato surpasses the true potato. From the sweet potato are also produced a highly specialized starch and industrial alcohol, and the residue in either case makes excellent cattle feed.

PUMPKIN

Then there is the pumpkin or squash (they are the same) of genus Cucurbita. The fruits are produced on vines which run along the ground, growing over and mauling other plants. The Spanish and Portuguese found this vegetable growing in many areas throughout our hemisphere, and they immediately began using it as food. The hungry Pilgrims first transformed it into a dessert in pie, but the Indians were already baking it in the shell over hot coals, for they found it quite sweet as compared with other foods they usually consumed.

The pumpkin is still widely eaten in the New World. Even its highly nutritious seeds are much esteemed and are often sold roasted. Whereas modern man improved many plants inherited from the Indians, the pumpkin was already so well perfected that no important improvement has been possible, except for selection of early-maturing varieties. We have still developed no types unknown to the Indians.

The pumpkin's native land appears to have been the central part of this hemisphere. The Basket Makers, who produced a civilization that existed two thousand years ago, knew and used pumpkins, while prehistoric cemeteries near Lima, Peru, have been found to contain vases modeled not only after the pumpkin, but also bearing a strong resemblance to the summer crookneck squash. Europeans early carried this vegetable back to the Old World where it is now as popular as it is here.

PEPPERS

The pepper must have been a great surprise to Columbus who discovered the red-fruited bell pepper

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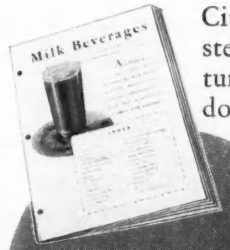

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(*Capsicum grossum*) when he was really in search of the black and white peppers of the East (*Piper nigrum*). No cultivated fruit comes in more forms than the pepper, for there seem to be peppers of every shape, size, and degree of pungency—some round, some conical, some flat like beans, some shaped like carrots or pears—dark red, scarlet, yellow, green, or almost white in hue. Peppers also vary in size from big ones shaped like bullnoses to tiny, pea-sized berries.

To become a pepper eater requires conscientious practice and considerable insensitivity to pain. An Oriental coolie will grind up entire fruits of the devil pepper and eat this fiery paste mixed in his rice and beans, a mess that would paralyze a neophyte. For the Mexican, devil pepper is about the most incendiary of the lot; tabasco sauce is made from it. Cayenne pepper is prepared by grinding the dried fruits, seeds and all, of certain peppers, while mild Hungarian paprika is made from dried and ground fruits from which seed and membrane have been removed.

Originally the pepper's use was therapeutic. Hippocrates claimed that the pepper of the East was good medicine for dropsy, colic, ague, toothache, and quinsy and that it was a gastric stimulant. He prescribed it both as a liniment and a gargle for sore throat. Columbus' physician, Chauca, in 1494 first mentioned the pepper of the New World as a condiment; soon it was used in dressing meats and in dyeing. But before Columbus landed, the pepper plant had spread from the land of the Incas to Central America and Mexico.

The Mexicans like peppers hot and eat them raw, but persons further north prefer the large, thick-fleshed, sweeter varieties. Green peppers (the unripe red ones) are rich in ascorbic acid and, on ripening, become rich in vitamin A, too. If the great discoverer from Genoa failed to find the pepper he was after, a great many people today are convinced that he came upon something just as good or better.

LIMA BEANS

That aristocrat, the Lima bean (*Phaseolus lunatus L.*), is also an American native, as its name indicates. It seems to have originated in Brazil, but Captain John Harris of the United States Navy brought the first seed from Lima, Peru, which he planted on his farm at Chester, New York. The plant belongs to the big legume family which includes common beans and peas.

Seeds of the Lima bean have been found with the mummified bodies of the Inca. One variety at least still grows wild in Brazil, but the plant must have been cultivated for generations before Europeans reached these shores. The original form was the pole Lima, the bush type having been a lucky genetic sport. But Lima beans come in three tribes—the sieva, the large-flat, and the potato. Most current varieties have come into use since the turn of the century when the industry started here.

Lima beans are rich in excellent protein, fat, carbohydrates, minerals, and the B-complex. When green they also contain vitamin A and ascorbic acid. They form a most palatable meat substitute, and the plant is also a soil builder because of its nitrogen-gathering habits.

CHOCOLATE

Cacao, known best in the form of chocolate or cocoa, is also a native to America, like rubber, corn, vanilla, and the turkey. The chocolate tree probably originated in the Amazon basin of Brazil, the Orinoco basin of Venezuela, or in Central America, but it has by now migrated throughout the tropics, although it still grows wild in the two river basins mentioned. It attains a height of about 15 ft. and may bear pods of beans for half a century. The pods grow directly out of the trunk and limbs with thirty or forty beans in each.

The pods are split to remove the beans which are then fermented, toasted, and ground to a chocolate-brown liquid which hardens into cakes when poured into molds. When these cakes are pressed, a fatty material, known as cocoa butter, runs out; the remainder, when ground, is powdered cocoa. Chocolate is made by sweetening and adding vanilla and sometimes cinnamon to the ground-up cakes without pressing out the fat.

Cocoa contains a strong stimulant, theobromine, which is related to caffeine. It contains good protein and has a high energy value, but the drug in it would certainly make it as undesirable for the young as coffee. When added to milk, chocolate sirup debases it nutritively by replacing high-grade with lower-grade food elements, although it renders the liquid more palatable to those whose distorted tastes no longer relish simple foods. The Aztecs used cocoa as a food drink.

YERBA MATE

Another beverage we owe to South America, where it has remained far more popular than elsewhere, is yerba mate. It is made from the powdered dried leaves of a native South American plant of the same name and is said to have some food value, but by no means as much as the cocoa beans which the Aztecs used for money and with which Cortez paid his soldiers.

The plant is a species of Ilex. Although it grows wild, it is now cultivated scientifically in plantations. In the wild state it assumes the form of a tree and may attain 60 ft. in height; it resembles the orange tree and the European laurel. The leaves are glossy green and rather hard and thick. Their brew somewhat resembles tea and is very highly esteemed in Argentina, but is modestly consumed in the United States. It was the favorite beverage of the Guarani

MEAT

And the Dietary of Pregnancy and Lactation

According to a study published in the recent past[1] it has been shown that nitrogen balance is suddenly reversed from positive to negative shortly before term. This negative balance is further intensified by substantial losses of nitrogen during parturition and the postpartum period. Lactation imposes still another burden on nitrogen metabolism.

This study again emphasizes the need for a diet rich in biologically complete protein during the latter half of pregnancy. In this manner, the physiologic loss of nitrogen at term can be compensated, avoiding negative nitrogen balance. A high protein diet has the further advantage of producing a more copious milk supply.

In another recent publication,[2] the prevention of the toxemias of pregnancy by dietary means was stressed. Foremost among the measures recommended was a diet rich in high quality protein to assure nitrogen balance.

Meat is an outstanding source of protein in the dietary of pregnancy and lactation for these four reasons: (1) It is notably rich in protein, from 17 to 20 per cent of its uncooked, and from 25 to 30 per cent of its cooked weight; (2) The protein of meat, regardless of cut or kind, is biologically complete; (3) The appetite appeal of meat is high, and (4) All meat is of excellent digestibility—from 96 to 98 per cent.

1 Stuart, H.C.: Effects of Protein Deficiency on the Pregnant Woman and Fetus and on the Infant and Child, New England J. Med. 236:507 (Apr. 3) 1947.

2 Zeigler, R.F., Jr.: Pre-eclamptic Toxemia of Pregnancy. North Carolina M. J. 8:655 (Oct.) 1947.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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American Meat Institute

Main Office, Chicago... Members Throughout the United States

Indians before the Spanish conquered Paraguay and the Portuguese took over Brazil.

CRANBERRIES

The Indians were also using cranberries as a relish with venison when this continent was first discovered. The berry is so named because its opening bud somewhat resembles the neck, head, and bill of the crane; it grows in both Americas. Commercial cranberry production is a highly specialized operation requiring carefully prepared bogs with an ample water supply. It got its start in Massachusetts about 1810 and later invaded Cape Cod. It takes about five years for a new bog to become a full producer and a good crop is 200 to 300 bu. per acre.

NUTS

Indian nuts, pine nuts, or piñon nuts, the seed of the tree of this name, come from the only native conifers of the Western Hemisphere which produce edible nuts of commercial importance. They grow wild in our Southwest and in arid parts of northern Mexico, thriving at elevations of from 5000 to 8000 ft. They bear cones which contain from two to thirty seeds averaging ½ in. in length and running twelve hundred to two thousand to the pound.

Piñon wood and its gum have been found among relics left by the ancient Basket Makers, forerunners of the Pueblo civilization which built America's first apartment houses. The trees bear incredibly large quantities of nuts every five to seven years and smaller yields annually. The nuts rank high in food value; they are more than half edible meat with a fat content of 60 per cent and their energy value is very high.

The Brazil nut, known in Brazil as the "Para chestnut" and here as the butternut, is produced by the tallest and most impressive tree of the Amazon basin, which often towers to 150 ft. Its fruit is a large, hard pod which contains from a dozen to a score of dark-brown Brazil nuts. However, its blossoms conveniently appear a year in advance of harvest, so that yields for next year can be estimated by the profusion of blossoms this year.

Export trade in these nuts had begun by 1633, early Netherlands' traders calling them "wild oil fruits." By 1935, some 50,000 short tons of the nuts were being gathered. Few are consumed in Brazil other than in Rio de Janeiro and Sao Paulo, but they have been popular in the United States, particularly at Christmastime, for many years. Their oil content averages 65 to 70 per cent and ½ oz. of the nut produces 100 calories.

Finally there is the pecan (you can pronounce that last syllable can or kahn, as you please), which is a North American native, but grows well as far south as central Mexico. It is a species of hickory that has been known to attain a height of 107 ft. and to yield 1½ tons of nuts a season. Union soldiers when returning from the South spread the pecan afar, but the principal commercial crop is still produced in Texas, Oklahoma, Louisiana, and Mexico.

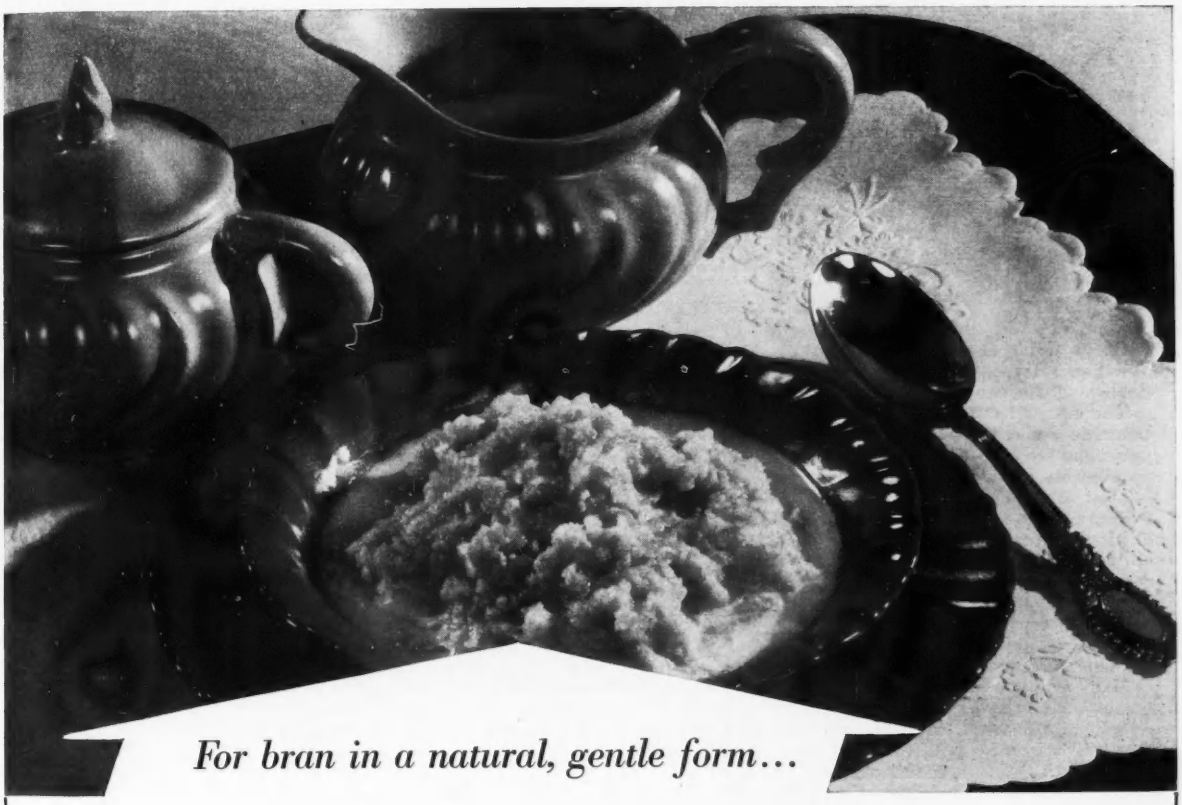
Pecans are rich in food value and average 70 per cent in oil content. Like all nuts, they yield excellent protein of about as high a biologic value as meat. In the 1941–45 period, production averaged 120 million lb. in the United States, equal to a farm value of $23,500,000. In addition, the Mexicans claim that the bark of the pecan tree is excellent medicine for intermittent fevers and dyspepsia.

Students vs. Adults as Taste Judges

Palatability of two types of Temple oranges—sour orange, and rough lemon—grown in two places in Florida have been studied, using two groups of judges. One group consisted of 39 adults, ranging in age from 19 to 70 years, with 38 years the average age. The adults were born in 28 different states and Canada, only 8 having resided the longest period of their lives in Florida. The second group of judges was composed of 23 high school boys and girls, whose age varied from 15 to 18 years, with an average of 17 years. Twelve of the students had been born in Florida, and 14 had resided there longest.

The adult judges in general scored all samples higher than did the high school students. Statistical analysis of the judges' scores in comparison with laboratory determinations of ascorbic acid, total solids, and acidity were made. The adults' ratings showed less correlation with laboratory determinations than the students', whose scores agreed more closely with both the content of solids and acid. This suggests that the younger group had a keener sense of taste. The students scored marked differences for oranges grown at different locations, too, which were not scored by adults, and these differences were borne out by the laboratory findings.

The study showed that there was no real evidence of varietal differences in palatability, but there was definite evidence of the superiority of sour orange over rough lemon in ascorbic acid content and total solids.—*Abstracted from a paper by P. L. Harding and F. M. Wadley, "Teen-Age Students Versus Adults as Taste Judges of Temple Oranges," Food Research 13: 6 (January–February) 1948.*



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But do you know of another unique advantage Pettijohn's offers your patients? It gives them bran as Nature intended it to be eaten —warm, moist, *gentle* bran, with the rest of the whole wheat grain, including the wheat germ.

In addition to its natural bran, Pettijohn's contains the whole grain food values of protein, minerals and B vitamins. It is made of choice plump whole wheat kernels steel-cut and flaked exactly as Quaker Oats are. Any serving of food contributing as much as 10% of the minimum daily requirements of a nutrient can be considered an excellent source of that nutrient. On this basis, a dish of Pettijohn's, served with milk and sugar, makes a real contribution to your patients' diets.

Serve Pettijohn's for whole grain nourishment, delightfully different taste and texture, and gentle natural bran. Pettijohn's cooks in less than five minutes and costs only 1c a serving.

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Contribution of one serving of Pettijohn's* to the minimum daily requirements of an adult

**As served with 4 ounces of milk and sugar.*

Nutrient	% furnished by 1 serving
Thiamin	16.20
Riboflavin	11.60
Iron	11.60
Calcium	19.20
Phosphorous	28.00

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Book Reviews

Chef's Guide to Quantity Cookery. By J. H. Breland. New York: Harper & Brothers, in Cooperation with Dahl Publishing Company, 1947. Cloth. Pp. 470. Price $6.

The author has taught quantity cookery at the Isaac Delgrado Trades School in New Orleans for about twenty years, and the recipes have been tested for quantity service by students in this school under his supervision.

Most of the recipes in this quantity cook book are for serving twenty-five portions. However, there are over one hundred recipes yielding less than six portions. All recipes are simply and clearly written with the amounts of ingredients given in both weight and measure. The yield is given in terms of portions and volume or weight. The time required for preparation of each recipe and cooking temperatures where applicable are given. An interesting short introduction is written for each group of recipes.

Many excellent ideas for adding interest and variety to the menu are to be found in the 1050 recipes presented. Included are recipes for 70 appetizers and relishes, 37 beverages, 17 cheeses, 59 eggs, 68 fish and sea foods, 28 griddle cakes and waffles, 90 meats, 62 meat substitutes, 80 poultry and game dishes, 29 salad dressings, 70 salads, 23 sandwiches, 93 sauces for meats, 48 soups, 159 vegetables, 38 breads, 58 cakes and cookies, 62 frozen desserts, 34 jellies and preserved fruits, 38 pies and pastries, 27 puddings and fruit desserts, 24 fillings and icings, and 45 dessert sauces.

The use of this book as a source of quantity recipes would be limited; however, any dietitian interested in increasing the appeal and diversity of the food served would find it inspirational.—*Sina Faye Fowler, Test and Development Section, U. S. Navy Supply Corps School, Bayonne, New Jersey.*

Synthetic Food Adjuncts. By Morris B. Jacobs, Ph.D. New York: D. Van Nostrand Company, Inc., 1947. Cloth. Pp. 335. Price $5.50.

Because the use of synthetic adjuncts in food has progressed so rapidly in recent years, the author felt the need for the material in this field to be assembled in a book. The book appears to be a comprehensive and well organized treatise on the subject. The author states in the beginning that synthetics should not be used as substitutes or replacements for food, but as adjuncts. When they are used as such adjuncts they can add definitely to the value of our diets by (a) adding nutritive value, (b) preventing food spoilage, (c) improving appearance, or (d) improving taste. They are to be used, of course, only when there is no harm done to the food and there is no deceit or masking of deterioration. The adjuncts which are discussed in great detail include: coloring materials, flavoring materials, preservatives, stabilizers, and finally vitamins. The composition, in many cases the structural formula, the properties, and the use of many colorings, flavorings, and the other adjuncts are given, together with the specifications of the Food and Drug Administration. Although the composition of many trade and experimental formulas are given, the book is not intended as a formulary.

Many tables are used to help in summarizing the information. There is a brief discussion of the physiology, psychology, and chemistry of the taste, and odor or smell or aroma, and flavor which is closely related to the principle of the composition of the different compounds used. The appendix includes the formulations of the various flavor ester mixtures which have been obtained from the literature. The book will prove valuable as a source and reference text to those engaged in work in the field and to those who need general information on the subject.—*Dr. Ruth Leverton, Department of Home Economics, University of Nebraska, Lincoln.*

Proteins and Amino Acids in Nutrition. Edited by Melville Sahyun. New York: Reinhold Publishing Corporation, 1948. Cloth. Pp. 566. Price $7.50.

This book is a distinct contribution to the newer knowledge of proteins. There is an introduction by Howard B. Lewis and fifteen chapters on different aspects of proteins, their use and functions in nutrition and in special conditions. Each chapter, written by an authority in the field, presents a well organized and documented review with fifty to two hundred or more references at the end of each chapter.

Information is well reviewed and summarized on topics which are ordinarily less readily available, such as "The Relation of Hormones to Protein Metabolism"; "The Protein Nature of Toxins, Antitoxins and Related Substances"; "Protein Nature of Filtrable Viruses"; and "Amino Acid Requirements of Avian Species."

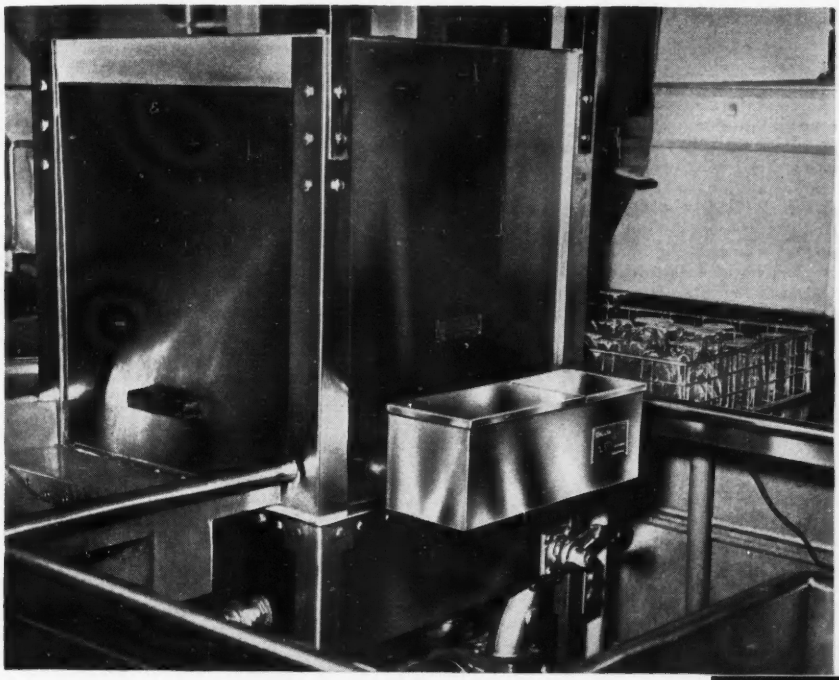
To those who are interested in the historical aspects of nutrition, the chapter on "Proteins in Nutrition" by Eliot F. Beach is a treasure house of information, illustrated with photographs of early workers in the field.

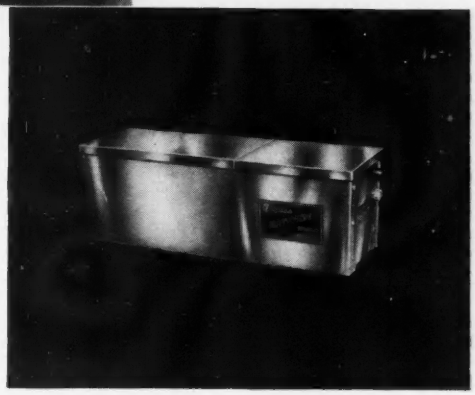
Practical applications and technical information are well-balanced. Tables, charts, and photographs are used throughout, and this book should prove equally valuable to the nutritionist, therapeutic dietitian, and medical student. —*Dr. E. Neige Todhunter, Head, Department of Foods and Nutrition, University of Alabama, Tuscaloosa.*

Baby Care from Birth to Birthday. By Edmund G. Lawler, M. D. Chicago: Wilcox & Follet Co., 1947. Cloth. Pp. 406. Price $3.95.

Dr. Edmund Lawler is Chairman of the Pediatric Department, Little Company of Mary Hospital, Evergreen Park, Illinois, and also Associate in Pediatrics, Loyola University School of Medicine, Chicago. His book was written in an attempt to answer the questions of a mother who is faced with the care of a new baby and to help her carry out her physician's instructions. It covers the baby's first year of life and includes such subjects as breast feeding, bottle feeding, and the formula making; clothing needs; development on a month-by-month basis; and diseases of babyhood. It is illustrated with numerous photographs of the author's patients depicting various phases in a baby's life.

The author approaches his subject formally, giving factual information without as much emphasis on the psychological needs of either the mother or infant as might be wished. Although there is some recognition of the fact that babies vary in their rate of development, these variations are not discussed fully. The discussion is limited to a few





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points under each topic and is presented in terms of the average infant. It would seem that if a mother is to be able to interpret her baby's *individual* growth pattern, she would need to know not only what the average infant does but how other normal infants vary from the average.

For instance, although Dr. Lawler does mention self-demand feeding for infants and the fact that "a baby should not be fed by the minute hand of the clock," this variation from the "average" is not emphasized or stressed. In fact, he states that most infants are placed on either a 3- or 4-hr. schedule. While it may be true that the average infant will be content on such a schedule, there are some infants who require more frequent feedings, particularly during the first few weeks of life, and there are others whose appetites vary from day to day. The mother who understands that these variations exist and that they are normal would probably feel freer to use her own judgment as to when to feed the baby and less apt to be bound by "the minute hand of the clock." A baby's sleeping habits, toilet training, play time, and so on are handled in a similar manner.

The introduction of solid foods into a baby's diet indicates an important advancement in his development to most mothers. Dr. Lawler recommends that cereal be started at three months, canned strained meat at four, egg yolk and vegetables at five, stewed fruits and vegetable soup at six, and after seven months such foods as Jello, custard, potatoes, and other vegetables. Other pediatricians have used earlier ages for introducing these foods and have felt that they have been well tolerated by the infant and have an advantage in that the baby becomes used to a variety of foods while he is still willing to accept them.

There has been much discussion about the problem of thumb-sucking—reasons why it occurs and ways in which it can be overcome. Although Dr. Lawler doesn't necessarily recommend the use of restraints or guards in his consideration of the problem, there are pictures included of a wrist guard and "Welcome Sleeve," which the caption explains "may be used to control or inhibit thumb-sucking." Thus, the conclusion may be drawn that these devices are an approved method of treating the problem. It is a controversial point, and many pediatricians and psychiatrists would not agree that it is advisable to use such methods.

The section on disease and disorders includes some diseases which are relatively rare, such as congenital defects, deficiency diseases, and kidney diseases, as well as the common contagious and infectious diseases of childhood. The advisability of including these in a book which is intended to help mothers in general enjoy and care for their children may be questioned. If a child does exhibit one of these complaints, the physician making the diagnosis would treat the child individually. Consequently, a discussion of them here may only be a source of worry to those parents whose children do not show these symptoms.

Since the trend in pediatrics seems to be towards a broader consideration of the baby as an individual, it would seem that greater flexibility in the recommendations for his care would be worth while.—*Lorraine Weng, University of Chicago Clinics.*

Chemical and Physical Investigations on Dairy Products. By H. Eilers, R. N. J. Saal, and M. van der Waarden. New York: Elsevier Publishing Co., Inc., 1947. Paper. Pp. 215. Price $4.

This volume is one of a series of Monographs on the Progress of Research in Holland. The present monograph contains three treatises, one by each of the cooperating authors, on subjects connected with the chemistry of dairy products. The original investigations on which this volume is based were initiated by the General Netherlands Dairy Union in 1941 in an effort to continue research on milk products during the war.

The first treatise concerns the colloid chemistry of skim milk. The author's experimental work on the calcium caseinate-phosphate phase of milk, on the proteins in milk denaturable by heating, and on the behavior of skim milk when it is concentrated with and without added sugar is reported.

A concise report of an extensive investigation of the oxidation-reduction potential of milk and milk products is given in the second treatise. This discussion of the influence of oxidative processes on the formation of defective flavors, and on other changes in the product, should be interesting and practical for the dairy chemist.

The third treatise presents results of work on the chemistry of offensive flavoring substances which may be formed during cold storage of butter. The forms in which iron, copper, and manganese occur in butter and the role of these minerals in the chemical deterioration of butter also are discussed.

Reference is made to numerous papers published both in the United States and in the European countries. These references, however, are necessarily limited to work published before the war.

This book, because the language employed is quite technical, will be of most value to those engaged in similar research on the chemical and physical properties of dairy products. It should be of interest to many, however, to see the significant amount of fundamental research which was carried on in Holland, even during the German occupation of that country.—*Juniata Strom Hirsch, National Dairy Council, Chicago.*

Administrative Field Consultation Service Terminated

The Executive Board of the American Dietetic Association approved the appointment of an Administrative Adviser for the Association on September 1, 1946. The function of the position was to provide consultation service to members of the Association on problems dealing with the administration of a dietary department.

Under the able direction of Bertha Biltz, the service was developed and has operated very effectively. Due to the nature of the service, however, the benefits of field consultation have been limited necessarily to a small percentage of the membership.

With this in mind, and the desire to provide services which are of benefit to the entire membership, the Executive Board terminated the field consultation service as of June 15, 1948. Miss Biltz will still be available for office consultation with members and advisory assistance by correspondence. Material from the Library of the Association will be loaned as usual. In addition to these responsibilities, Miss Biltz is at present assisting with the administrative program of work of the Association.

The Executive Board wishes to express to Miss Biltz, for the Association, its appreciation for the high quality of field consultation work she has rendered.

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Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, Dietary Department, The Johns Hopkins Hospital; Mrs. Quindara Oliver Dodge, Women's Educational and Industrial Union, Boston; Mrs. Corinne Robinson, Temple University School of Medicine, Philadelphia; and the Journal staff.

AMERICAN HEART JOURNAL

Vol. 35, April, 1948

* The electrocardiogram of man in semistarvation and subsequent rehabilitation. E. Simonson, A. Henschel, and A. Keys.—p. 548.
* Hereditary disturbance of cholesterol metabolism: A factor in the genesis of atherosclerosis. E. P. Boas, A. D. Parets, and D. Adlersberg.—p. 611.

Electrocardiogram in Semi-starvation. In thirty-two normal subjects, electrocardiograms were taken at regular intervals during a control period of three weeks, during a semi-starvation period of six months (24 per cent weight loss), and during the period of rehabilitation. The electrocardiograms became clinically abnormal in the majority of the subjects during semi-starvation. There was slowing of the heart rate, due in most instances to sinus bradycardia. Most of the electrocardiographic items were only partially recovered during the twelve-week rehabilitation period but were at control values in thirty-two weeks. The implication is that prolonged semi-starvation produces a deterioration of the state of the myocardium which might be functionally compensated for a time. Such compensation might break down under conditions of additional stress.

Cholesterol Metabolism. One of the hereditary factors for arteriosclerotic heart disease may reside in abnormal cholesterol metabolism. The serum cholesterol was found to be elevated above 300 mg. per 100 cc. in seventy-one (58 per cent) of a group of 122 patients with proved coronary atherosclerosis. The authors suggest that the burden of disturbed cholesterol metabolism may be eased by giving a low-fat, low-cholesterol diet with lecithin feeding. The role of the thyroid hormone in the pathogenesis of atherosclerosis is discussed.

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 15, April, 1948

* The use of high protein diets in the treatment of diabetes mellitus. D. Adlersberg.—p. 109.
* Malnutrition and vitamin deficiency in recently released prisoners of war. A. A. Goldbloom, A. Lieberson, and C. D. Rosen.—p. 115.

High-Protein Diets and Diabetes Mellitus. High-protein diets are indicated for diabetic patients with sprue, liver disease, and with nephritic syndrome. A high-protein diet is better tolerated by the non-insulinized diabetic because of slow process of liberation of carbohydrate from the protein. A table of ten commandments for weight reduction in the diabetic is given.

Malnutrition in Prisoners of War. The human body has remarkable recuperative power after long periods of marked systematized undernourishment. A study was made on 121 American prisoners released from German prison camps. Only one prisoner showed moderate undernourishment. More than 53 per cent showed no evidence of any vitamin deficiency clinically, and others showed minimal vitamin deficiency. Analysis of supplementary rations furnished in the Red Cross packages indicated that they were the most important single factor in preventing serious nutritional failure in these prisoners.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Vol. 75, January, 1948

*Survey of patients with juvenile diabetes mellitus. A. L. Chute.—p. 1.
Hyperlipemia following intravenous infusion of hypertonic solution of sucrose. W. Heymann and M. E. Hartman.—p. 68.
* Essential fructosuria in two siblings. D. Trivette and K. Anderson.—p. 88.

Juvenile Diabetes Mellitus. A review of 123 cases of juvenile diabetes developing prior to 1932 is presented. Fifty-two patients are living, fifty-eight are dead, and thirteen have not been traced. Twenty-nine patients survived for twenty years; twenty-four are still living. These persons show pronounced evidence of degenerative lesions, arteriosclerosis, albuminuria, and retinitis. These complications are present to a lesser degree in the group surviving fifteen years. Inadequately controlled carbohydrate metabolism, an error in fat metabolism, a deficiency of sex hormones, or the production of a specific toxin have been listed as possible causes for these complications by various groups. The author suggests that it is wise to maintain the level of blood sugar as close to normal limits as is reasonably possible until the cause or causes for these conditions have been established. It is also suggested that some organization, such as the department of health, should assume responsibility for keeping in contact with juvenile patients after graduation from the pediatric age group to provide supervision and treatment.

Fructosuria. Two cases of essential fructosuria in siblings are presented. This apparently harmless condition is rare but may be mistaken for diabetes mellitus. The patient has an inability to utilize fructose normally, whether it is ingested as simple fructose or as a substance, such as cane sugar, which is capable of yielding fructose on digestion. In cases of essential fructosuria, excretion ceases when the food intake is deprived of any source of fructose. The condition may continue for years without unpleasant or serious consequences. The condition is benign, and the prognosis is excellent. Tests are given for making a differential diagnosis.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 38, April, 1948

* Relationship of tryptophane to the incidence of dental caries. N. C. Turner and G. E. Crowell.—p. 525.
Paralytic shellfish poisoning on the Canadian Atlantic Coast. J. Gibbard and J. Naubert.—p. 550.

Vol. 38, May, 1948

* Susceptibility to typhus of rats on deficient diets. F. K. Fitzpatrick.—p. 676.

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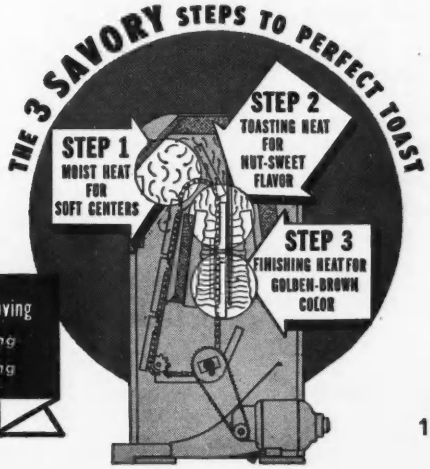
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Epidemic Typhus and Diet. The observation that there is an increased mortality in epidemic typhus when this disease manifests itself in malnourished populations is not new. Nevertheless, little experimental work has been done to correlate diet and susceptibility to typhus. The research reported here was done on rats. Diets low in protein and low in the B-complex were fed *ad libitum*. The vitamins were found to be the important factor. An inadequate amount of thiamine, riboflavin, or pantothenic acid was found to increase the susceptibility of the rat to typhus. It was noted that the foods containing adequate amounts of these vitamins are often the same foods which are seldom available to the victims of war and poverty.

AMERICAN JOURNAL OF SURGERY

Vol. 75, February, 1948

* Chronic diarrheas. J. S. D'Antoni.—p. 332.

Chronic Diarrheas. Among the causes listed for diarrhea are the following: ingestion of improper food and drink; overindulgence of poor grade liquor; deficient diets, as in pellagra; bacterial or protozoal infections, such as shigellogis, brucellosis, and amoebic and bacillary dysentery; giardiasis and malarias; overdosage with arsenic, mercury, or mineral oil; and parasitic infestation. Chronic diarrheas (ten days or more) are treated at once with multiple vitamin preparations of high potency.

ANALYTICAL CHEMISTRY

Vol. 20, March, 1948

Vitamin A and carotenoids in the blood serum of dairy cattle. D. B. Parrish, G. H. Wise, and J. S. Hughes.—p. 230.

Vol. 20, April, 1948

* Biological assay of vitamin A. J. R. Foy and K. Morgareidge.—p. 304.

Determining vitamins D_2 by two physical chemical methods. D. T. Ewing, M. J. Powell, R. A. Brown, and A. D. Emmett.—p. 317.

Trace metal determination in fats. R. D. Coleman, J. B. Thompson, and I. Branum.—p. 365.

Biological Assay of Vitamin A. There has been a need for an improved bioassay for vitamin A. A proposed method, which depends on the fact that the amount of vitamin A stored in the liver varies directly with the dose fed, was applied to a routine bioassay procedure and found to be preferable to the curative-growth (U.S.P.) method now employed. It is recommended for its specificity, precision, and economy. The method is described in detail.

INDUSTRIAL AND ENGINEERING CHEMISTRY

Vol. 40, April, 1948

Symposium on insecticides in food production.

*Introduction. J. M. Ginsburg.—p. 673.

Insecticide industry's contribution to food production. L. S. Hitchner.—p. 679.

*Use of DDT insecticides on food production. O. G. Fitzhugh.—p. 704.

Experiments with peas and sweet corn treated with DDT insecticides. H. A. Lardy.—p. 710.

Vol. 40, May, 1948

* Factors influencing rate of deterioration in dried egg albumen. G. F. Stewart and R. W. Kline.—p. 916.

Glucose-protein reaction in dried egg albumen. R. W. Kline and G. F. Stewart.—p. 919.

Production of orange juice concentrate and powder. H. W. Schwarz and F. E. Penn.—p. 938.

Insecticides in Food Production. The purpose of this symposium, which was presented before the 112th Meeting of the American Chemical Society, was to survey the insecticide field and to assemble present knowledge on the chemical control of insect pests in food production. The food products were grouped as growing crops, livestock, and food in storage. Each group was discussed separately. In this introduction, it is pointed out that the damage caused by insects to food products in the U. S. is conservatively estimated at about $2 billion annually. The main classes of insecticides, which are grouped according to the feeding habits of insects, are listed.

DDT and Food Products. Knowledge of DDT as it affects food is reviewed in this article. Experiments have shown that small amounts of DDT in animal diets cause cumulative storage of the insecticide in large amounts in the animal tissues, particularly in adipose tissue. Because of the enormous quantities of animal products used by man for food, this fact may pose a serious problem in human feeding and may assume the same importance as the problem of relatively larger amounts sprayed on fruits and vegetables which are consumed directly by man. The problem may be especially pertinent in the case of infants whose chief food is milk. Also discussed is a study on rats which indicated that relatively high dosages of DDT in the diet markedly affected reproduction.

Deterioration in Dried Egg Albumen. Dried egg products usually show serious deterioration during storage, particularly at temperatures above 20°C. In the experiments reported here, systematic studies were made of the several known variables influencing the rate of color and fluorescence development and solubility loss in dried albumen. Storage temperature, glucose and moisture contents, and *p*H were found to influence the rate of deterioration. Other factors, still unknown, also affect the rate of deterioration in egg albumen.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 136, February 21, 1948

* Nutrition and endocrinology. F. De P. Miranda.—p. 542.

Vol. 136, March 6, 1948

* Protein and amino acid preparations. Report of the Council on Pharmacy and Chemistry.—p. 692.

Vol. 136, March 20, 1948

Common behavior disturbances in the first two years of life. B. Spock.—p. 811.

Vol. 136, April 3, 1948

* Recent progress in nutrition and its relation to drug therapy. C. A. Elvehjem.—p. 915.

Vol. 136, April 17, 1948

* Management of protein deficiency in surgical patients. J. D. Stewart, H. W. Hale, Jr., and S. M. Schaer.—p. 1017.

* Foods of plant origin. L. A. Maynard and W. L. Nelson.—p. 1043.

Vol. 137, May 8, 1948

* Nutritional requirements during pregnancy and lactation. B. S. Burke and H. C. Stuart.—p. 119.

Dietary therapy of hypertension. Editorial.—p. 147.

Nutrition and Endocrinology. The influence of food on the glands of internal secretion is gradually becoming known. It is being realized, too, that a lack of certain

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nutrients may produce an effect similar to a dysfunction of a certain gland. If both of these possibilities are given consideration, a parallelism may be seen between clinical pictures differing in etiologic significance. The author classifies the disturbances of insufficient nourishment in a new way to include not only undernutrition and malnutrition, but also hypoproteinosis. This latter term means a deficiency of protein food or of good quality proteins. Although it is a common disease today, it does not have a name in the accepted medical literature. The major part of the article is devoted to a discussion of hypoproteinosis in its dry form—the reflection of its occurence in the vital statistics of a country and the effects of the disease on individuals. Furthermore, the resemblance of the clinical picture of hypoproteinosis to that of certain endocrine disturbances is shown. The condition is illustrated in the Mexican Indian who lives in a region where hypoproteinosis is common. Children under six years of age are usually the victims. After the age of six, the child is said to be adapted to hypoproteinosis; a compromise is reached between plasma volume and protein concentration by the interaction of compensatory mechanisms.

Protein and Amino Acid Preparations. This report describes the various types of protein and amino acid preparations and tells how they are most effectively used. Recommendations made by the Council on Pharmacy and Chemistry of the American Medical Association are given for acceptable protein mixtures. Special mention is made of protein hydrolysates.

Nutrition and Drug Therapy. During the evolution of medical treatment, much greater emphasis has been placed on drugs than on nutrition. However, there has always been a close association between nutrition and drug therapy. Studies in nutrition have led to a greater specificity in the use of drugs. This paper considers three areas in which nutrition studies have given a basis for specific therapeutic agents. Discussion is given to: (a) anti-anemic substances which include iron, liver preparations, and folic acid; (b) amino acids, their bearing on adequate protein intake and on total nutrition; and (c) metabolic antagonists, whose recognition has depended to a great extent upon nutrition studies. Although the number of specific therapeutic agents has increased greatly and their value has been demonstrated, these drugs cannot be relied upon entirely; unknown factors are likely to be ignored. Natural food sources are still desirable. On the other hand, it is obvious that there will always be a need for specific therapeutic agents for clinical use. Until recently the introduction of drug-like materials in therapy has been dependent largely on trial and error, but in the future the search for new therapeutic agents will be based largely on studies with animals and micro-organisms.

Protein Nutrition for Surgical Patients. This paper is concerned with some of the more practical aspects of protein nutrition in surgical patients. Requirements are listed for a solution of amino acids to be used intravenously. Charts and graphs are included to illustrate the effect of injection of amino acid solutions on various individuals. The properties of a satisfactory mixture for intrajejunal feeding are outlined, and a formula which meets these criteria reasonably well is given. Also included is a chemical analysis of the mixture.

Foods of Plant Origin. This review, which is one of a series of articles, is concerned with the nutritive value of foods of plant origin. In this discussion the foods are grouped under the following headings: cereals; legumes and nuts; vegetables; fruits; sugars, sirups, and molasses; and vegetable oils. Variations in food value, caused by processing, storage, and cooking factors, are pointed out if they have a particular bearing on the significance of the average values cited.

Nutrition in Pregnancy and Lactation. The purpose of this article is to summarize the present understanding of nutrition as it relates to pregnancy and lactation. A number of antepartum studies on relatively large numbers of women are cited. They demonstrate a strong relationship between the character of the maternal diet and the course of pregnancy and the development of the fetus. Reference is made, too, to animal experiments in which fetal damage resulted from maternal dietary deficiency. A detailed discussion is given of the recommended nutritional allowances for pregnancy, with particular emphasis on the requirement for protein, calcium, phosphorus, vitamin D, iron, iodine, and the various vitamins. The foods or their nutritional equivalents which should be eaten daily are summarized. Attention is given to the dietary adjustments which are necessary to insure optimum nutrition during lactation.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 173, April, 1948

* The metabolic interrelationship between tryptophan, pyridoxine, and nicotinic acid; forced feeding studies in rats. H. Spector.—p. 659.

Interrelation of Tryptophane, Pyridoxine, and Niacin. The apparent interchangeability of niacin and tryptophane in promoting growth has been demonstrated only with diets containing marginal amounts of tryptophane. In this experiment, rats fed diets containing a minimum of tryptophane were compared with those fed diets containing an adequate amount of tryptophane. This comparison was made in order to determine whether there was any relationship between the excretion of niacin and the gain in weight. It was shown that while tryptophane could entirely replace niacin, niacin could not replace tryptophane—an essential amino acid. Any beneficial effect of pyridoxine was dependent upon the presence of an adequate amount of niacin. Under the conditions reported here, there was no relation between gain in body weight and the urinary excretion of niacin and N^1-methylnicotinamide.

THE JOURNAL OF HOME ECONOMICS

Vol. 40, February, 1948

* Vegetable variety affects human nutrition. B. L. Wade.—p. 75.
* Nutrition education in the fourth grade. B. Cline, V. Johnson, and M. W. Lamb.—p. 77.
* A community nutrition course. E. Donelson.—p. 84.
A school lunch workshop. S. B. Gray.—p. 85.

Vol. 40, March, 1948

* Ascorbic acid retention in cooked vegetables. I. Noble and J. Worthington.—p. 129.
Dietary practices of some Wisconsin children. M. S. Reynolds, M. Dickson, M. Evans, and E. Olson.—p. 131.
* Revolution in sugar industry. K. B. Cronkhite.—p. 143.

Vol. 40, April, 1948

Food intakes of 50 college women studied. C. A. Hoover and M. C. Coggs.—p. 193.
* Work simplification in dishwashing. E. L. Goble.—p. 195.
Canning vegetables in the pressure saucepan. K. Taube and V. E. Sater.—p. 197.

Nutritive Value of Vegetables. By illustrating the wide variation in the nutritive value of various strains of certain vegetables, the author is in a position to make certain recommendations for future work in this field. Nutritionists should acquire a working knowledge of vegetable varieties; horticulturists have a responsibility for seeing that varietal information is readily available. Cooperation between nutritionists and horticulturists would result in the development of comprehensive information on the various vegetable varieties. Peas, cabbage, sweet potatoes, and tomatoes are among the vegetables which should be studied.

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Nutrition Education. A nutrition unit taught in two fourth grade rooms of a school in Lubbock, Texas, is described. The lessons were planned around the selection and eating of three meals daily by young children. Emphasis was placed on food groups rather than on individual foods or on nutrients. A file of teaching aids was prepared before the unit was started, and a simple animal feeding experiment was conducted, using two white rats. Key foods were served to the children in class. The methods used in evaluating the results of this nutrition instruction are described.

Community Nutrition Course. A nutrition course in the School of Home Economics at Ohio State University has been found to be a successful cooperative project between the University and the community. The course is planned to acquaint students with solved and unsolved problems of the community and to let them see for themselves their social responsibility for using their knowledge of nutrition. The type of work being done by the students in cooperation with the various community agencies is discussed.

Ascorbic Acid in Vegetables. In order to investigate further the ascorbic acid retention of vegetables cooked by commonly used household methods, a study was made using cabbage, rutabagas, and green beans. The results, reported in a table, suggest that large- and moderate-size pieces of vegetable retain equal quantities of soluble nutrients when cooked in boiling water. On the other hand, very small pieces of vegetable retain a smaller amount.

Sugar. Liquid sugar has caught the attention of alert food manufacturers who are installing new equipment and revising formulas for their products in order to use this product. Dietitians are also investigating the possibilities of using liquid sugar. The sugar is pumped by refineries' drivers into customers' storage tanks, from which it is channeled by a simple turn of the valve. Valuable storage room is saved and manpower costs are cut. The product is now packed in No. 10 tins and can be conveniently used as a ready-prepared sweetener for berries, fruit drinks, fruit or sauce toppings for desserts, for cutting the concentrated flavor of some sirups, and as a base for table sirup. Because of its invert sugar content, it helps to retain moisture in baked goods and candies. Another excellent use for liquid sugar is as a pack for frozen fruits and berries.

Dishwashing. This study was made in order to examine the work involved in the task of hand dishwashing and to apply the principles of work simplification to improve the sequence, the hand and body motions, or the tools and equipment used. First a survey was conducted to determine the dishwashing methods used by 278 women. Then, the five most common methods were chosen for a study by micromotion. The two shortest methods of this group were then altered to incorporate the most economical parts of the other methods. The resulting improved methods are described. They are: (a) the sinkless, improved method and (b) the sink, improved method.

THE JOURNAL OF NUTRITION

Vol. 35, March, 1948

* The effect on rat growth of alternated protein intakes. R. A. Harte, J. J. Travers, and P. Sarich.—p. 287.

* Studies on the comparative nutritive value of fats. X. On the reputed growth-promoting activity of vaccenic acid. H. J. Deuel, Jr., S. M. Greenberg, E. E. Straub, D. Jue, C. M. Gooding, and C. F. Brown.—p. 301.

* Production of functional and fatty changes in the liver by a chronic vitamin B complex deficiency, and interrelationships with protein intake. V. A. Drill and T. A. Loomis.—p. 333.

* Dental caries in the cotton rat. X. The effect of fluidity of the ration. E. P. Anderson, J. K. Smith, C. A. Elvehjem, and P. H. Phillips.—p. 371.

The relation of thiamine clearance to blood levels in man. M. C. Blanchaer and E. Cameron.—p. 391.

Vol. 35, April, 1948

* False high values for ascorbic acid in guava juice. A note on the use of the colorimetric method with 2,4-dinitrophenylhydrazine. E. Hartzler.—p. 419.

* The absorption of iron from beef by women. F. A. Johnston, R. Frenchman, and E. D. Boroughs.—p. 453.

* The erosive action of various fruit juices on the lower molar teeth of the albino rat. W. Wynn and J. Haldi.—p. 489.

The physiological availability of pantothenyl alcohol. S. H. Rubin, J. M. Cooperman, M. E. Moore, and J. Scheiner.—p. 499.

* The energy expenditure for quiet play and cycling of boys seven to fourteen years of age. C. M. Taylor, M. W. Lamb, M. E. Robertson, and G. MacLeod.—p. 511.

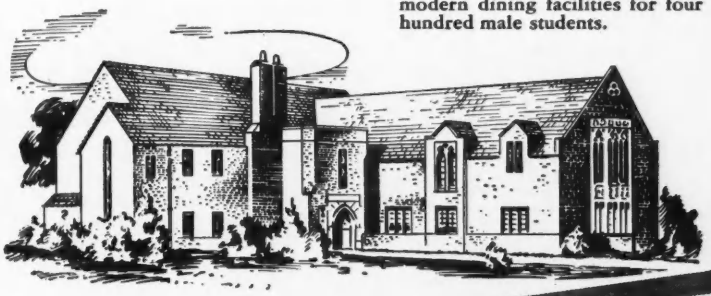
Protein Alternation and Rat Growth. Most small animal nutritional experiments are carried out with diets of constant composition. However, human dietary practice for the most part includes diets of varied composition. The aim of most animal experimentation is the procurement of data applicable to man. Therefore, this study was made to determine the effect of alternated protein intakes on rat growth. The results indicated that growth responses were satisfactory and virtually identical (provided the protein quality was constant), whether the protein was supplied at a constant level in the diet or varied from day to day. Alternation of both quality and quantity of protein in the daily rations resulted in a significantly poorer growth response. It was concluded that if the maximum effectiveness from a given amount of dietary protein supplement is to be achieved, the daily protein supplementation should be maintained at a constant level.

Vaccenic Acid and Growth. It has been reported that vaccenic acid promotes growth. The tests reported here were undertaken to determine the validity of this report. It was found that no differences in the rate of growth of male and female rats were noted over a six-week period when the diet contained butterfat or cottonseed oil. The growth rate of rats receiving rape-seed oil diets was somewhat less, and efficiency of utilization of these diets was poorer than that obtained on the other diets. No stimulating effect on growth was produced by the administration of vaccenic acid or hydrogenated China wood oil to the rats on any of the diets used. It seems that vaccenic acid plays no specific role in relation to growth of the rat.

Diet and Hepatic Injury. Because the effect of methionine and protein intake on the liver has commanded so much attention, few observations have been made as to the possible effect of the B-complex on liver function. Using dogs as subjects, this experiment was designed to permit observations of possible interrelations between the B-complex and protein as they affect the liver. A *chronic* deficiency of the entire B-complex was produced under conditions of controlled protein intake. If the protein intake was high, liver function tests and hepatic histology remained normal. However, changes in liver function were noted in the dogs fed diets containing only a normal amount of protein. Obviously an interrelationship exists between protein intake and a chronic deficiency of the B-complex.

Dental Caries in the Cotton Rat. Previous studies made on the cotton rat have shown that this animal is free of carious lesions when fed a diet of liquid whole milk. In contrast, extensive dental decay develops on a diet of dry rations, high in sucrose or other fermentable carbohydrates. Therefore, studies on various dry and liquid rations were undertaken. The results indicated that fluidity of the ration was an important factor in producing dental caries in the cotton rat.

False Values for Ascorbic Acid. Determinations of the ascorbic acid content of stored guava juice by the colorimetric method have given values which are considerably higher than those obtained by the usual dye-titration method. Further studies were made to clarify this situation. Samples of the guava juice were assayed during various



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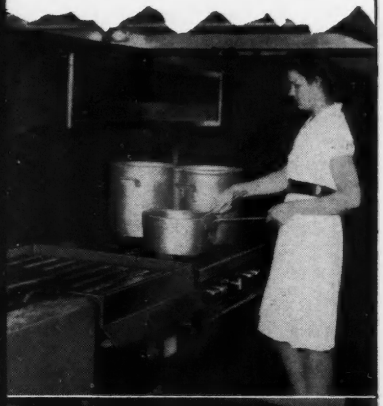

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periods of storage. Both the colorimetric and dye-titrations methods were used. Fresh ripe fruit was also analyzed. In addition, a biological method was employed. Samples of guava juice were given to human subjects who were receiving diets low in ascorbic acid. The data obtained by these tests suggested that the colorimetric method gave falsely high values for the ascorbic acid content of the stored guava juice. It was concluded that the falsely high values were probably due to the presence of diketogulonic acid, a derivative of ascorbic acid.

Absorption of Iron. Five young women in good health were placed on a diet contining 7 mg. of iron. This was judged to be the lowest iron intake that would be adequate. For two weeks adjustments were made in the diet. During the next eight weeks, the adjusted basal diet was administered. During the last four of the eight weeks, two 100-gm. patties of ground beef were added, one at breakfast and one at lunch. Except for the first two weeks, collections of feces were made; during the entire ten-week period, weekly composites of the foods were preserved for analysis. The iron absorption from beef for four out of five of the subjects ranged from 32 to 58 per cent. These data led to the conclusion that young women on a diet adequate in all respects absorb from one-third to more than one-half of the iron of beef, or possibly that the beef improves the absorption of iron from the entire food mixture, rather than itself contributing all of the iron absorbed after it was added to the diet.

Tooth Erosion by Fruit Juices. This study was initiated in order to obtain comparative experimental data on the action of a number of fruit juices on the teeth of the albino rat. Erosion in the lower molar teeth resulted from the daily ingestion of each of the following canned fruit juices when they served as the sole fluid intake over a period of 100 days: apple, grape, orange, tomato, sweetened grapefruit, pineapple, and prune juices. The greatest amount of erosion occurred in teeth of the animals fed apple, grape, and grapefruit juice; the least erosion occurred with tomato and prune juice. Erosion of a milder degree resulted from the ingestion of tomato, orange, and sweetened grapefruit juice three times a day for 200 days. There was no strict relationship between the degree of acidity of the juices and the amount of tooth destruction.

Energy Expenditure of Children. Since the energy cost of many children's activities has not been measured as yet, an investigation was made of the energy expenditure of seven- to fourteen-year-old boys. Measurements were made on children sitting at quiet play and cycling in the respiration chamber. The results are reported, and comparisons are made with figures found in the literature.

SCIENCE

Vol. 107, March 19, 1948

Interference with estrogen-induced tissue growth in the chick genital tract by a folic acid antagonist. R. Hertz.—p. 300.

Vol. 107, April 2, 1948

* Effect of cooking on the DDT content of beef. R. H. Carter, P. E. Hubanks, H. D. Mann, L. M. Alexander, and G. E. Schopmeyer.—p. 347.

Vol. 107, April 9, 1948

* Physical state of lipids and foreign substances producing atherosclerosis. J. R. Moreton.—p. 371.

Vol. 107, April 16, 1948

* Crystalline vitamin B_{12}. E. L. Rickes, N. G. Brink, F. R. Koniuszy, T. R. Wood, and K. Folkers.—p. 396.

Vol. 107, April 23, 1948

An experimental syndrome of fatty liver, uric acid kidney stones, and acute pancreatic necrosis produced in dogs by exclusive feeding of bacon. J. Groen.—p. 425.

DDT Content of Beef. During the spring of 1946, hay containing DDT was fed to some beef cattle. When several of the animals were slaughtered, the carcasses were held in freezer storage for several months and then portions of one animal were used to determine the DDT content of the meat before and after cooking. Details of the experiment are described. According to the results of chemical analysis, the DDT in the beef was not materially decomposed or lost during cooking.

Development of Atherosclerosis. Intravenous injection of foreign substances, such as pure citrus pectin, methyl cellulose, and gum acacia, have been shown to cause lesions which were typically those of atherosclerosis. In this paper a comparison is made of the physical state of these injected foreign substances with the lipids in sustained hyperlipemia, alimentary hyperlipemia, and normal blood. Along with the technical discussion, the fact is brought out that the only time the plasma of normal individuals carries large amounts of coarsely particulated matter is during the postprandial period following a fat-rich meal. This temporary appearance of large lipid particles in the blood causes the normal defense mechanisms of the intima to retain some of these particles.

Vitamin B_{12}. Research and clinical tests have shown that further purification of the "anti-pernicious anemia" principle in commercial liver concentrates could be effected. As a result, a crystalline compound, vitamin B_{12}, has been isolated from clinically active liver fractions. Case histories are cited in which strong hematopoietic responses were obtained when varying amounts of the compound were administered.

SURGERY, GYNECOLOGY AND OBSTETRICS

Vol. 86, May, 1948

* Atypical adynamic ileus apparently caused by nutritional (thiamine chloride) deficiency; report of six cases. D. J. Leithauser.—p. 543.

The biological chemistry of wound healing: I. The effect of dl-methionine on the healing of wounds in protein-depleted animals. A. A. Localio, M. E. Morgan, and J. W. Hinton.—p. 582.

Thiamine Deficiency and Distention. The cases of six patients with adynamic ileus with severe abdominal distention are reported. Four of the patients were alcoholics; the other two had been on severely restricted diets. Only one of these patients had a stomatitis characteristic of B-complex deficiency. There was no evidence of steatorrhea. In each of these cases there was dramatic response to the administration of thiamine chloride and B-complex. The experience suggests that nutritional deficiency should be suspected and a therapeutic trial of vitamins made in cases of abdominal distention where evidence does not justify a positive diagnosis of mechanical obstruction of the intestine. If the distention is caused by B-complex deficiency, the prompt use of parenteral vitamin therapy may avoid unnecessary operations.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 4, March, 1948

Operating a snack bar. D. Willard.—p. 18.

* Common sense in the kitchen. M. E. Terrell.—p. 30.

Vol. 4, April, 1948

* What about food service facilities? H. W. Herman.—p. 12.

Reducing food waste. A. Hudson.—p. 17.

Planning Kitchens. Today greater attention is being given to scientific facts in the design of institutional kitchens. Cooperation of the food manager, the architect, and other individuals familiar with the various phases of kitchen planning is important. An overall picture is given of the four general functions of institutional food units:

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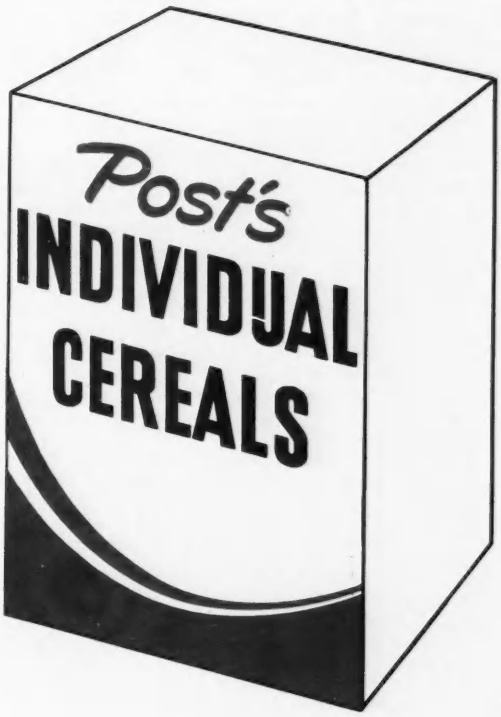

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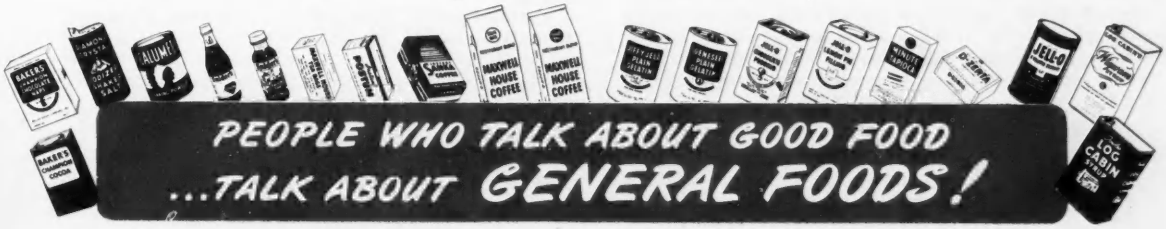


(a) the receiving and storing of raw materials and supplies; (b) the manufacture of products; (c) the merchandising of food; and (d) the maintenance of plant, equipment, and personnel. Factors influencing the efficiency with which these functions are carried out are discussed.

Food Service Facilities. A Food Service Survey was conducted by this magazine among the 1751 colleges of the nation. Twelve per cent of the questionnaires have been completed, and the response is statistically valid in terms of institutions of all categories of enrollment. Tables are included which give the following information: (a) number of students fed and meals served in college-owned facilities, (b) percentage of increase in board fees during the past two-year period, (c) total annual dollar volume of food service facilities, (d) average weekly salary for food service personnel, and (e) how the food service dollar is allocated. There was a sorry lack of data regarding raw food costs. Information is given as to the various ways in which overall costs of food service operation were controlled. Many of the other details of a college food service operation are discussed.

FOOD INDUSTRIES

Vol. 20, April, 1948

* How the food plant can use a sanitation rating system. M. H. Solworth.—p. 82.
* Fried bacon rind strips win acceptance in South.—p. 108.
* Visualization: new tool used in designing bakery layout.—p. 114.
* Egg albumen substitute.—p. 131.
* New sanitizing agent.—p. 172.

Ice cream dispenser.—p. 186.

Using a Sanitation Rating System. The purposes of a sanitation rating system are pointed out in the article. A companion article which appeared in a previous issue of *Food Industries* contained a description of the system itself. Some of the accomplishments which can be seen as a result of using the described sanitation rating system are: (a) Measurement can be made of the quality of cleaning achieved by the expenditure of the sanitation budget. (b) It is possible to make quick surveys of any aspect of sanitation under consideration. (c) The system may be used as a medium for executing and reflecting company policy. (d) It provides a chart of departmental sanitation performance which also indicates the progress made. (e) It helps department heads to control sanitation. (f) The department head has a sound basis for requests for maintenance repair. Organizations which have used this rating system have found that employee cooperation has been enhanced.

Bacon Rind Strips. French-fried pork skins were introduced in Atlanta, Georgia, in 1940. These skins are "popped" like popcorn, packaged, and served like potato chips. The product is described as being crisp, light, and tasty and can be served with a variety of foods and as a garnish. Four operations, which are required in the preparation of the strips, are described.

Visualization of Layouts. A three-dimensional transparent plastic plant model constructed to scale aids in the alteration of floor plans. This type of visual aid can find application in almost any situation where an existing plant is to be remodeled or where a new unit is to be constructed. Many of the pitfalls of poor planning can be caught, and the suggestions of all individuals concerned can be taken into account. Details of constructing the model are described and illustrated.

Egg Albumen Substitute. A new modified albumen is available to the bakery and confectionery industries as a substitute for egg albumen. The method of modifying the protein consists of subjecting the blend of proteins to a special process, resulting in protein stabilization. The albumen has been found to be easy to handle. For replacing frozen egg whites in making confections, 1 lb. of the product is used to replace 6 to 8 lb. of frozen whites. Heat is necessary to effect complete stabilization of this egg albumen substitute.

New Sanitizing Agent. A product is described which combines the germicidal and fungicidal properties of a quarternary ammonium compound with a compatible nonionic detergent to make cleaning easier. This product is said to be ideal for the general cleaning of refrigerators, walls, floors, and food storage area.

HOSPITAL MANAGEMENT

Vol. 65, April, 1948

* Vitamins for the sick. A. J. Harper.—p. 98.

The place of cereal germs in the hospital diet. A. C. Johnson.—p. 108.

Serving Food. Whether or not a patient eats the food put before him depends to a great extent upon the way in which it is served. The portions and color of food and the way it is arranged on the tray are all important factors to consider in making a meal appetizing. Some suggestions for introducing interest in the meals include colored napkins, flowers, holiday favors, garnishes, special china, and gelatin and cookie molds. A tip to the busy dietitian, in using some of these ideas, is to make a small card catalogue containing numerous suggestions for easy ways in which to add interest to patients' trays.

HOSPITALS

Vol. 22, April, 1948

* Electronics may revolutionize cooking methods. M. Gillam.—p. 44.

Portion Control. M. Gillam.—p. 44.

Electronics and Cooking Methods. Development of the electronic range and the increased use of frozen foods present interesting possibilities for changes in our present methods of preparing and serving hot foods. With electronic cooking, preparation time is a matter of seconds. Some units are equipped with a unit for flash searing of roasts and steaks before cooking, to do away with a "steamed" appearance of the meat. Other applications of electronic heating include defrosting pre-cooked frozen foods with a minimal rise in bacterial counts. A 30-lb. can of frozen eggs is defrosted in 13 min. with no bacterial increase. High costs and many technical difficulties must be overcome before the electronic range can be considered seriously for general hospital use. However, some new hospitals are planning their floor kitchens in such a way that electronic ranges may be installed at a future date when they become practical for general use.

THE HOTEL MONTHLY

Vol. 56, March, 1948

* Food—just as the chef planned it.—p. 42.

Vol. 56, April, 1948

Thawing frozen assets out of out-moded refrigeration equipment.—p. 24.

* How to cut your payroll costs by simple analysis.—p. 30.

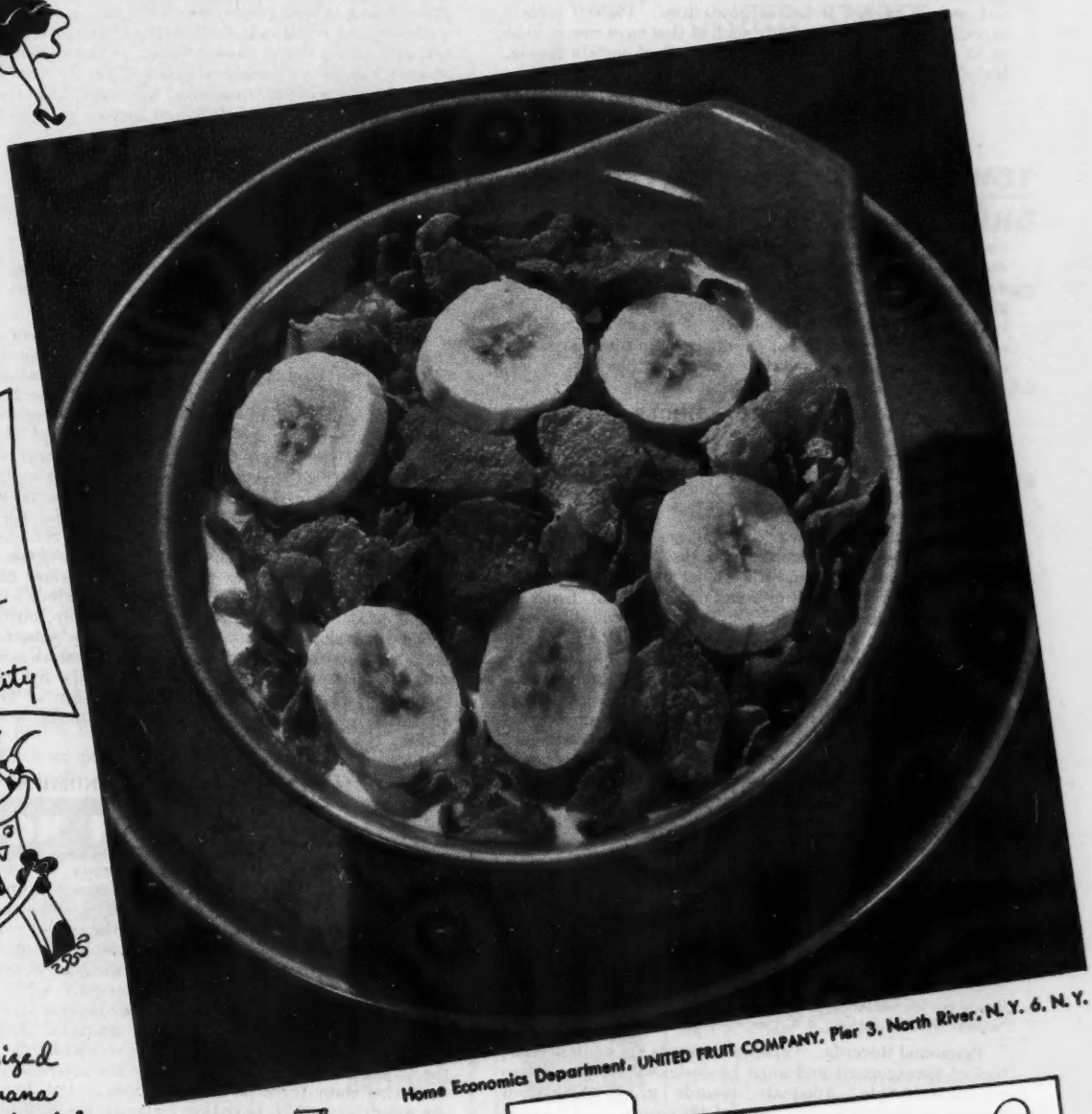
Personalizing the preparation and service of good food.—p. 46.

Standardized Salad Recipes. The La Salle Hotel in Chicago prides itself on its salads. It has over one hundred standardized recipes for salads and although the size of a salad may differ in different dining rooms due to the cost, they will all taste alike. A glossary of salad terms is given, and there are pictures to illustrate some of the favorite salads.

Cutting Payroll Costs. A simple formula for "high spot" analysis of payroll costs is given in this article. The first steps in making this analysis are based on the fact that workers produced more before the war than today. Com-

CHIQUITA BANANA SAYS:

A cheerful breakfast— CORN FLAKES and BANANAS



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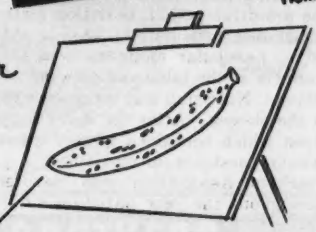

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1 ounce (1 cup+) crispy corn flakes
4 ounces (½ cup) whole milk
1 teaspoon sugar
1 fully ripe banana
(an average serving)

parative figures on individual work loads in current and prewar payroll periods can be made into charts that will quickly show the difference and provide an accurate basis upon which to base new staff standards. Weigh, study, and analyze the information you obtain from such a survey; then discuss your conclusions and plans for staff requirements with department heads. The analysis outlined does not require highly technical procedures. Payroll dollars saved as the result of a study such as this have run as high as 12 or 13 per cent of the total payroll of certain hotels. Helpful graphs and charts illustrate the article.

THE MODERN HOSPITAL

Vol. 70, April, 1948

* Old kitchen made new. V. Newman.—p. 88.

Remodeled Hospital Kitchen. When the bed capacity of the Presbyterian Hospital in Charlotte, North Carolina, was increased, a number of changes and improvements were made in the food service. One of the major changes was the inauguration of decentralized food service instead of centralized service. The advantages resulting from this type of service are clearly shown. Changes in employee schedules, in the number of employees and dietitians, and improvements in equipment are also mentioned.

THE NATION'S SCHOOLS

Vol. 41, April, 1948

Proper classroom lighting a prerequisite to learning. L. Smaage.—p. 34.
* Financing the school lunch program. R. L. Johns.—p. 43.
From cafeteria to lunchroom. H. G. Lewis.—p. 56.

Financing School Lunch. The phases of state, federal, and local financing of schools and the operation of their school programs are discussed. A list of the latest trends in the financing program of education is given. Until an ideal program is determined, the following procedures are offered for maintaining school lunch programs: (a) Each state should establish a foundation program of education including school lunch. (b) The foundation program should be financed either jointly by the state and local school units or entirely by the state. (c) The amount included for the school lunch program should be at least equal to the nonfood costs, and the federal appropriations should be used to supplement the state foundation program in accordance with the laws and regulations governing federal funds.

PERSONNEL JOURNAL

Vol. 26, April, 1948

* Personnel records—a new slant. P. S. deQ. Cabot.—p. 362.
Differences between clinical and industrial non-directive counseling. D. S. Arbuckle.—p. 374.

Vol. 26, May, 1948

Unions and job evaluation. L. Cohen.—p. 7.
* S-s-sh! It's confidential. J. K. Gerdel.—p. 24.

Personnel Records. Personnel records are an important tool of management and must be designed to be useful to all departments. Adequate records give information needed to formulate policies, and they provide statistical controls to point out the weakness and strength of supervisors in evaluating job performance, interviewing and training employees, and reducing labor turnover. Personnel records also supply information needed to comply with government legislation and help boost public relations through efficient exchanges of references with other industries, colleges, and civic organizations. Definite objectives must be formulated in conjunction with the personnel staff to guarantee efficient operation and to safeguard the confidential information. A periodic auditing of all records helps to reveal inefficiencies. Steps to take in setting up a record system are outlined.

Should It Be Confidential? There are four general classes of personnel information which are considered confidential by many organizations. These are: (a) information dealing with compensations; (b) personnel records on present and former employees; (c) information regarding qualifications and standards of hiring or promoting employees; and (d) service or benefit plans for the welfare of employees, including vacation plans. The author, in his research work with information of this nature, has found no great reason for such mystery and secrecy with personnel information.

PRACTICAL HOME ECONOMICS

Vol. 26, May, 1948

Germany needs modern home economics. K. Holtzclaw.—p. 312.
Gelatin ensembles with citrus accessories. E. Platt.—p. 334.
* Does nutrition education pay dividends? B. Lockwood.—p. 339.
School lunch menus and quantity recipes. W. L. Cronan.—p. 340.
What's going on in foods? E. Platt.—p. 342.

Nutrition Education. Does nutrition education in the classroom pay? An attempt to answer this question is being sought through a study in nutrition education conducted by the Department of Nutrition at the Harvard School of Public Health. The schools collaborating in this project are some of the public schools of Newton, Massachusetts, a suburb of Boston. A survey was made of the food intake and needs of some 3400 children at the elementary school level, and it served as a basis for the remedial nutrition program. A list of "Goals for Nutrition Education for Elementary and Secondary Schools" was compiled and used as a basis for the actual needs of the children. A program was then planned to show how nutrition education could be fitted into the various subjects, of the curriculum. As a result of the survey, nutritional deficiencies showed up. Statistically, the schools that included nutrition education as a part of the curriculum showed decided improvements. Comments by parents, teachers, and the children showed evidence of changed attitudes regarding disliked foods, new foods, and food habits.

WHAT'S NEW IN HOME ECONOMICS

Vol. 12, May, 1948

* A school drive for good nutrition. E. H. Davidson.—p. 127.

Nutrition Drive. Each year, Jefferson Junior High School, Washington, D. C., conducts a nutrition drive. The results of these drives are cumulative, and since good eating habits are stressed throughout the school year, the drives have been increasingly effective. The objectives of the 1947 drive were: (a) to improve the general health of the pupils; (b) to teach pupils to recognize a "balanced meal"; (c) to develop desirable food habits; and (d) to have pupils learn and practice good table manners. Activities for the drives were divided into three periods: the pre-drive, the actual drive, and the post-drive. The activities carried on during these three periods are explained in detail. In the pre-drive period, nutrition material was collected and plans were formulated. During the course of the actual drive, particular emphasis was placed on courtesy and manners at the table and on a nutrition review of previous drives. Nutrition was integrated with all subjects taught in the classes. After the drive was completed, a test was given which contained twenty questions on manners and twenty questions on nutrition. A program of the Parent Teachers Association was devoted to nutrition, and throughout the year nutrition movies were shown.

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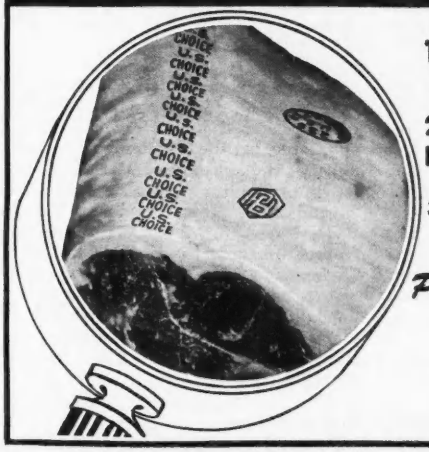

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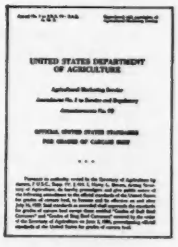

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News Notes

National Conference on Family Life. Some nine hundred representatives of 125 major national organizations, one of which was A.D.A., attended the National Conference on Family Life held in Washington May 5 to 8, and affirmed their belief that although family life in the U. S. is threatened with disintegration, something can be done about it. Section meetings covering ten different areas affecting family life made recommendations which will be referred for action to the participating organizations which sponsored the conference. Before the Conference convened working papers summarizing studies in these ten areas were sent to delegates for study.

Although the Conference itself did not make formal recommendations because it was not a pressure group, many solutions to the problem of America's disintegrating family were suggested and some sessions passed specific resolutions. A summary of the work of these special sections follows.

The section on legal problems endorsed the specific recommendations proposed by the American Bar Association and asked for a Commission appointed by the President to re-examine laws regulating marriage and divorce and legal procedure, the establishment of family and juvenile courts, and the extension of legal aid offices and low-cost legal services.

Delegates at the sessions on housing endorsed the Taft-Ellender-Wagner bill, including its public housing programs, and called for more rental homes, more three-bedroom homes, a greater variety of dwellings, and more self-sufficient communities.

Those attending meetings on education decided that high school students should receive training for marriage and family problems, and with such training the tide of maladjustments and difficulties which marriages show today might be stemmed. They believe also that education in family living should include boys as well as girls and that teachers should be prepared to handle classes in family problems and personal counseling of boys and girls by training beyond textbooks.

The section on counseling and guidance resolved that more professionally trained people are needed for family counseling, and stated its support to the extension of competent vocational guidance, employment counseling, and placement services for youths and other age groups and recommended that teachers receive more training in family relationships.

The section on community participation called for more team work in the neighborhood to achieve better streets, recreation, schools, homes, and other services designed to improve family life.

Conference delegates also urged stabilization of the national economy with particular emphasis on the need for extending coverage of social security legislation, more education of families and their members as to the value of good home management and means of attaining it, the promotion of adequate medical service for families, relation of recreation outside the home to the family, and the promotion of community organizations concerned with social welfare through state and federal assistance.

A.D.A. representatives at this Conference were: Dr. Ercel Eppright, A.D.A. Chairman of Professional Education; Ada Berning Pear, College Park, Maryland; Anne Stewart Miller, A.D.A.Legislative Chairman; and Eloise Trescher, Director, Food Clinic, John Hopkins Hospital, Baltimore.

Following the Conference, Mrs. Pear expressed the following thoughts concerning the relation of dietetics to family problems: "No matter with what part of the field of dietetics we may be associated, we are dealing with families—members of families as patients, clients, customers, as employees, students, nurses, doctors, and other professional persons, and in some fields, whole families. Although dietitians do consider families as a whole and how the individual fits into the family, there may be areas in which our relations with individuals as members of families have not been explored and which need to be re-examined. Furthermore, we should do some constructive thinking as to how we, as individuals and as an association, can devise new ways, new skills, and perhaps even new services—as well as perfect old ones—to help families in all stages—the founding, expanding, and contracting. In so doing, we shall be joining our forces with 125 other organizations and many millions of individuals in trying to improve family life in America."

UNESCO Pacific Regional Conference. The Pacific Regional Conference of UNESCO met in San Francisco, May 13 to 15, with seven Western States, Alaska, and Hawaii being represented.

The First Plenary Session was held in the War Memorial Opera House where three years ago the United Nations was born. Dr. William Carr, Executive Secretary, Educational Policies Commission, National Educational Association, spoke on "The Task of This Conference." The Honorable George V. Allen, U. S. Assistant Secretary of State for Public Affairs spoke on "The Role of UNESCO in the World Crisis." With these two addresses everyone had outlined for them the purpose of UNESCO and were told that UNESCO's goal is peace—but not peace at any price.

The conference continued by being divided into five sections: Education, Communication, Human and Social Relations, Cultural Interchange, and Natural Science. Some sections divided into smaller groups so that they were more workable units. These sections had lively discussions, and the delegates were enthusiastic, returning home with many ideas for their communities.

The Second Plenary Session was addressed by Vera Micheles Dean, Director of Research, Foreign Policy Association, on "Our Responsibilities in 1948," and by Erwin Canham, Editor, *Christian Science Monitor*, who spoke on "Our Capacity to Meet World Crisis with Understanding."

At the Final Plenary Session, George V. Stoddard, President of the University of Illinois, spoke on "This Conference and Community Action," and Margaret Mead talked on "This Conference and Personal Responsibility."

The enthusiasm of the three thousand delegates, the resolutions, and recommendations adopted during the three day meeting were gratifying and should give encouragement to the other countries that subscribe to UNESCO.—*Helen Hawver Anderson and Helen Cahill, A.D.A. Representatives.*

Conference on Poultry Standards. A conference on "Inspection and Grading of Eviscerated and Drawn Poultry," sponsored by the Department of Agriculture, Production and Market Administration, Poultry Branch, was held May 24 and 25 at Hotel President, Kansas City, Missouri. About eighty persons from all parts of the U. S. attended the conference representing producers, processors, distributors, state marketing officials, state college of agriculture officials, public health officials, consumers (members of A.D.A.), and veterinarians.

The following papers were read at the first morning session.

"Trends in Processing and Distribution of Poultry and Volume Official Inspection and Grading" by Melvin W. Buster, Chief, Marketing Services Division, Poultry Branch, Production and Marketing Administration, USDA.

"Organization and Operation of the Poultry Inspection Service, and Pro-

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BROILED, FRIED & SAUTEED: Rub in ¼ teaspoon Ac'cent per ¾ lb. just before cooking or, preferably, 10 min. before to allow penetration.

POTTED MEATS, ROASTS, LOAVES & STEWS: Add ¼ teaspoon Ac'cent per lb. of meat before cooking.

BREADING FOR CHOPS, FISH, FOWL, ETC. Add 1 teaspoon Ac'cent per 4 oz. fine bread crumbs.

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VEGETABLES

FRESH, FROZEN, CANNED AND CREAMED: ASPARAGUS, BEETS, BROCCOLI, BRUSSELS SPROUTS, CABBAGE, CARROTS, CAULIFLOWER, CORN, LIMA BEANS, ONIONS, PARSNIPS, PEAS, STRING BEANS, ETC.
Add ¼ teaspoon Ac'cent per 8 oz. of vegetables before cooking. It is best to add Ac'cent to the sauce in creamed vegetables.

POTATOES: AU GRATIN, ESCALLOPED, CREAMED, HASH BROWNED, WHIPPED, ETC. Add ¼ teaspoon Ac'cent per ½ lb. Add Ac'cent at time of seasoning

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CREAMED DISHES

CHICKEN A LA KING, CREAMED TURKEY & MUSHROOMS, DEEP DISH CHICKEN POT PIE, CREAMED CODFISH, CREAMED SHRIMP, LOBSTER NEWBURG:
Add ¼ teaspoon Ac'cent per 8 oz. serving.

FRICASSEE OF CHICKEN Add ¼ teaspoon Ac'cent per lb. of eviscerated chicken.

MACARONI AND CHEESE: Add ¼ teaspoon Ac'cent per 10 oz. serving.

In creamed dishes it is best to use Ac'cent in the sauce.

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posals for Extension of Such Service" by Dr. B. C. Pier, Chief, Poultry Inspection Section, Dairy Branch, Production and Marketing Administration, USDA.

"The Need for Up-to-Date Grading Programs" by R. F. Frazier, Executive Secretary, Southeastern Poultry and Egg Association.

The conference discussed the status and adequacy of present inspection program of individual carcasses of poultry and considered suggestions and problems of official grading. The following recommendations were approved by the group before adjourning:

(a) That the industry use the Institute of American Poultry Industries' Suggested Sanitary Standards as a basis for establishing sanitary standards for poultry processing establishments.

(b) That the Department of Agriculture be requested, in cooperation with the industry advisory committee, to draw up standards of quality for individual birds for drawn poultry.

(c) That generally graded dressed poultry be permitted to retain its identity as to grade after it is drawn, with the exception of "C" quality.

(d) That the poultry at the consumer level be described in terms of "live," "dressed," and "ready-to-cook (either whole or cut up)" with subdivisions of "drawn" and "inspected (or eviscerated)."

(e) That the Department of Agriculture, in cooperation with the industry advisory committee, seek some means to reduce the cost of inspection, so that the small volume plants can have the same advantages as the large.

(f) That the government be requested to revise its regulations to permit drawn poultry to be prepared in the same plant as inspected poultry—*Ruth Gordon and Margaret Blaylock, A.D.A. Representatives.*

Meeting on Problems of Foreign Students. On May 10, 11, and 12, in Ann Arbor, Michigan, the A.D.A. was represented at the Conference on International Student Exchanges by Marjorie Stewart of the University of Michigan Hospital. This conference was called to assist educational institutions and agencies in the U. S. to develop an expanding international cultural relations program, particularly through student exchanges.

Canadian Dietetic Association Meeting. On June 2, 3, and 4, the Canadian Dietetic Association met at the Mount Royal Hotel, Montreal. Doris Johnson, Diet Therapy Chairman, was the official representative of the A.D.A. at this meeting, although a number of other U. S. dietitians attended. Some were on the program, including Wintress Dalby Murray, Director of the approved dietetic internship at Eastman Kodak Company, Binghamton, New York, who spoke on "New Trends in Teaching Methods," and Adeline Wood, whose subject was "Suggested Guides for Purchasing."

Among the other papers given at this meeting were:

"The Effect of Lack of Food on Health" by Dr. F. F. Tisdall, University of Toronto

"Application of Nutrition Research to Food Supply" by Dr. R. H. Common, Professor of Chemistry, Macdonald College, McGill University, Quebec

"Food Problems in Nassau" by Jean Brown, Dietitian, Fort Montagu Beach Hotel, Nassau, Bahamas

"The Biological Basis of Dietary Standards" by Dr. E. W. Crampton, Professor of Nutrition, Macdonald College, McGill University, Quebec

"Inadequate Nutrition with Adequate Diets" by Dr. I. M. Rabinowitch, Associate Professor of Medicine, McGill University, Quebec

"Protein Requirements in Illness" by Dr. J. S. L. Browne, Director, McGill University Clinic

"The Public Health Nutrition Problem as Seen by Nutrition Survey" by Dr. Jean Webb, Department of Health, University of New Brunswick

"The Supervisor as Personnel Manager" by M. J. Wise, Jr., Industrial Relations Consultant, New York City

"Work Simplification in Kitchens" by Merle D. Schmid, Industrial Management Engineers, Chicago

Awards. The first winners of the *Dole Travel Award* of the Hawaiian Pineapple Company are Bessie Shimanuki and May Inouye of the University of Hawaii. Each year the company plans to select two home economics students at the University of Hawaii and provide for them a four-week trip to the mainland under the chaperonage of Patricia Collier, Dole Home Economist. The winners this year attended the national convention of the American Home Economics Association, and in addition visited educational institutions and food packing plants in Minneapolis and Chicago, after which they are spending a week in the Dole Home Economics Department testing recipes. Both Miss Shimanuki and Miss Inouye are interested in dietetics.

The 1948 $5000 award of the *Passano Foundation*, established by Williams & Wilkins, medical publishers, goes to Dr. Helen B. Taussig, Associate Professor of Pediatrics, and Dr. Alfred Blalock Professor of Surgery, John Hopkins Medical School, for developing the operative procedure generally known as the "blue baby operation." The award was presented at the annual meeting of the American Medical Association in Chicago on June 23.

Leslie F. Wiggins of the University of Birmingham, England, was presented on April 26 at the Hotel Biltmore, New York City with the *Third Intermediate Sugar Research Foundation Award.* The honorarium which accompanies this award amounts to $5000, and this presentation also makes Dr.Wiggins eligible for the Grand Award of $25,000 to be made by the National Science Fund in 1950. By utilizing sugar in various ways, Dr. Wiggins has shown the possibilities of its becoming a source of many important organic chemical compounds. He has worked out an efficient conversion method for the production of levulinic acid.

The Institute of Food Technologists has announced that the first *Stephen M. Babcock Award* has been presented to Dr. Frederick C. Blanck, Administrative Fellow of the H. J. Heinz Company fellowship at Mellon Institute, Pittsburgh. This award of $1000 was provided by a grant from the Nutrition Foundation and was made at the annual meeting of the Institute of Food Technologists in Philadelphia in June. Dr. Blanck was chosen for his outstanding contributions to the field of food technology which influence public health through more nutritious food. During World War II, Dr. Blanck directed the development of new Army rations and the improvement of packaging methods.

Catholic Hospital Association Meeting. From June 6 to 10, the Catholic Hospital Association met at the Municipal Auditorium, Cleveland. Sessions were devoted to the problems of the various departments of a hospital, including the dietary department. The program concerning dietetics was held on Tuesday, June 8, with Helen McLachlan, Assistant Professor of Dietetics, St. Louis University School of Nursing, presiding. On the program were Bertha Biltz, A.D.A. Administrative Adviser, who spoke on "What About Selection and Training of Employees–" and Sister M. Ethel of of Marymount, Cincinnati, whose subject was "The Dietary Department of the Small Hospital—How We Solved Our Problems."

Graduation of Interns. In Los Angeles on April 15, seven dietetic interns at the Veterans Administration Hospital were honored at a graduation tea after having completed a year's internship. A most attractive program, cut in the shape of the map of California, gave some history of the state, which recently began a three-year celebration, each year of which will mark the century anniversary of a turning point in the state's history. Graduates were: Amy

New Appointments, Veterans Administration

The following hospital appointments of dietitians (not previously announced) have been made by the Veterans Administration

Name	Position	Location
	Branch No. 2	
Ruth Cottinger	Staff Dietitian	Batavia, N.Y.
	Branch No. 9	
Elizabeth J. McIntyre	Staff Dietitian	Wadsworth, Kans.
	Branch No. 10	
Martha J. Haws	Staff Dietitian	McKinney, Texas
	Branch No. 12	
Ruth Norman	Staff Dietitian	Los Angeles, Calif.
Marietta S. Vance	Staff Dietitian	Van Nuys, Calif.

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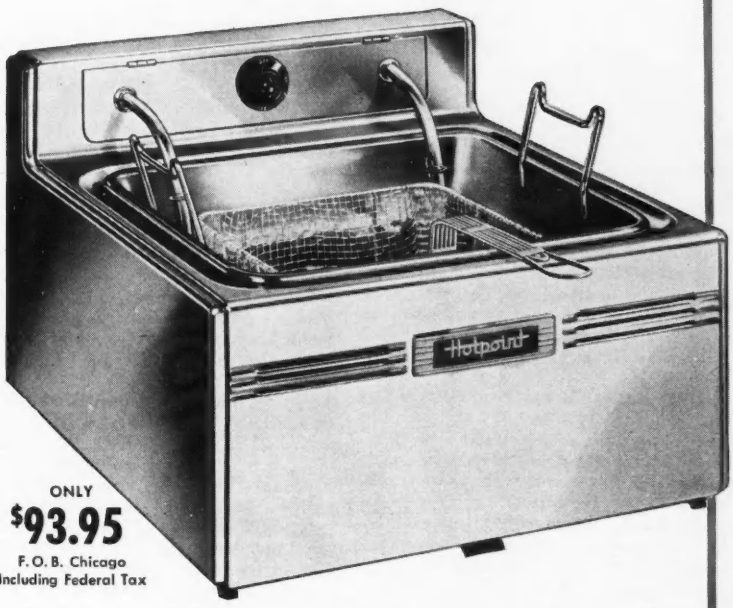

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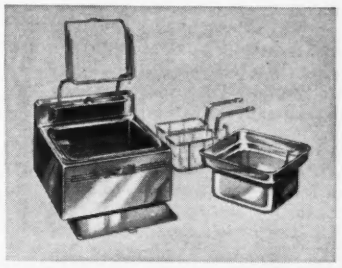

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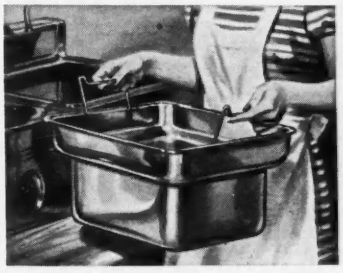

Just lift out fat compartment, and pour off fat for straining. The compartment is then ready to clean. Hotpoint's exclusive "lift-out" feature means no more clogged drains, no more leaky valves, or hard to clean corners.

Clean the fat container in the same way as any cooking utensil. Just empty container, wash, rinse and dry thoroughly.

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Priscilla Beringer, Mollie E. Beckham, H. Virginia Holliday, Beatrice Nathanson, Rose Santandreu, Lessie Edity Wagoner, and Elizabeth M. Zehnle.

New Course Director. On May 17, Ruth M. Kahn took over duties as Director of the Dietary Department at Michael Reese Hospital, Chicago. In her new position, Miss Kahn will also serve as director of the hospital's approved dietetic internship. She was formerly Chief Dietitian, Veterans Administration Hospital, Hines, Illinois.

Correction. On pages 492 and 493 of the June issue of the JOURNAL, the captions for the graphs used to illustrate the paper, "Dietary Practices vs. Food Expenditures in Families Receiving Public Assistance" by Margaret Dickson Strauss and May S. Reynolds were incorrect. They should have been labeled as follows:

FIG. 1. *Average expenditures per A.M.U. per month for different sized families.*

FIG. 2. *Distribution of families with reference to consumption of various nutrients. Each bar represents all of the forty-two families.*

FIG. 3. *Median percentage deviation from recommended allowances for each nutrient, arranged according to family size as calculated in A.M.U.'s.*

Vocational Guidance Booklets. The American Home Economics Association has published two new vocational guidance booklets to spotlight two specialties within the field. The first, *Your Career in Home Economics Research*, is a sixteen-page copyrighted publication which sells for 35 cents. It is well illustrated and takes up the opportunities for research in the special fields of family economics and home management, family life and child development, food and nutrition, housing and equipment, textiles and clothing, and home economics education.

Your Career as a County Home Demonstration Agent is an eight-page booklet which includes fifteen pictures of country home demonstration agents at work, as well as appropriate text material covering qualifications, preparation, advantages, and duties of this occupation. The price is 25 cents.

New Diet Manuals. St. Luke's Hospital, Cleveland, has recently revised its *Manual of Diets*. It is a mimeographed, fifty-six page book and includes more than forty-five special diets as well as special lists of foods, such as "Acid-Producing Foods," "Diabetic Food List," "Neutral Food List," "Purine Content of Foods," and so on. A copy has been placed in the A.D.A. Library and is available for loan to members.

A second new diet manual received by the A.D.A. Library, which may be borrowed by members, is that prepared by the dietary staff of Newark Beth Israel Hospital, Newark, New Jersey. This manual includes for the various diets information on foods to avoid and sample menus, as well as lists of foods to be included and the indications and purpose of the various diets.

Report of Breakfast Campaign. The West Virginia State Nutrition Committee has issued a planographed booklet describing the state-wide campaign to promote the eating of good breakfasts. This publication includes exhibits of publicity as well as information about purposes, organization, and procedures of the campaign.

Film on Scurvy and Ascorbic Acid. Mead Johnson and Company, Evansville, Indiana, has available for loan a 16-mm., black and white, sound film on "Ascorbic Acid and Scurvy." Prepared in 1947 by Dr. Frederick F. Tisdall of the University of Toronto, it shows the history, physical signs, symptoms, diagnosis, treatment, and the relation of ascorbic acid to scurvy. Charts show the ascorbic acid content of various foods and how it is influenced by methods of storage, handling, and cooking.

Institute for College Food Service Directors. On July 26, 27, and 28, the magazine, *College and University Business*, will conduct, with the joint sponsorship of Northwestern University, an institute for food service directors at the Hotel Knickerbocker, Chicago. Subjects to be covered include: food service management, control of food costs, personnel training, kitchen layout and equipment, and purchasing and inventory control. Enrollment is limited to 100.

New Booklets. (1) The American Institute of Baking has just released the revised edition of its small booklet, *Eat and Grow Slim* which includes one week's menus for reducing and tables of caloric values.

(2) Public Affairs Pamphlet No. 139 of the Public Affairs Committee, New York City, is titled *Live Long and Like It.* Selling for 20 cents, it deals with the general problems of aging and geriatrics, and one section is devoted to the dietary problems of elderly people, stressing the need for high calcium, high iron, and high protein intake. Its author is C. Ward Crampton.

(3) A new government publication is *School Lunch Recipes Using Nonfat Dry Milk*, which was prepared by the USDA Bureau of Human Nutrition and Home Economics in cooperation with the Production and Marketing Administration. The booklet contains recipes for twenty-seven different dishes in quantities of 100 servings, all of which have been tested in a number of schools and found acceptable. The main dishes conform to the requirements of Type A meals. The recipes are printed on one side of the paper only, so that they may be cut apart and added to the card file. In the introduction, information is given on how to use nonfat dry milk.

(4) Of interest to many local and state groups of dietitians will be the picture booklet, *How to Establish a School of Cookery in Your Community* issued by the National Restaurant Association and prepared by its Educational Director, Alberta M. Macfarlane. In it are included steps to take in starting a school of cookery in any state, information on the George-Barden Act and the Smith-Hughes Act, both of which provide appropriation by Congress of money to help with vocational, trade, and industrial education in the states. The inside back cover of the booklet lists the state directors of vocational education in all states.

(5) An informational booklet has been released by the Food and Nutrition Board of the National Research Council. In it is given a description of the National Research Council and its publications. This general information is followed by a list of the officers of the Food and Nutrition Board, its Steering Committee, and the members of the Board. Also listed are the various working committees and their members and the publications which the Board has prepared.

Short Course in Restaurant Administration. At the University of Chicago on June 21 to 23, the National Restaurant Association sponsored the Fourth Short Course, general theme for which was "Management and Management Controls in the Restaurant Industry." The six sessions of the three-day course covered: "Promotion of Human Efficiency," "Control of Food Acceptability," "Assuring Profits Through Control of Costs," "Food Production—A Science and an Art," "Maintaining Volume of Business," and "New Developments in Management."

Associates of the Food and Container Institute. After almost a year's preliminary work on the part of an interim policy committee, the Associates of the Food and Container Institute have been formally organized. Some 166 companies and trade associations are included in the membership. The new group will

Army Announcements Concerning Personnel

The War Department has released the following official list of names of Medical Department Dietitians (not previously announced) who have been separated from service:

Captain

George, Ruth L., R-319, Grasmere, N. H.

First Lieutenants

Dale, Lily, R-481, Livingston, Tenn.

Jones. Catherine L., R-2435, 314 Tunnel Blvd., Chattanooga, Tenn.

Jones, Marion E., R-2161, Scott Ave., Glenshaw, Pa.

Kittams, Marguerite., R-2464, Great Falls, Mont.

Radebaugh, Phillis R., R-1248, % Mrs. Hersey, 1434 S. Lincoln St., Denver, Col.

Sullivan, Jean C., R-2493, 119 Vann, Syracuse, N. Y.

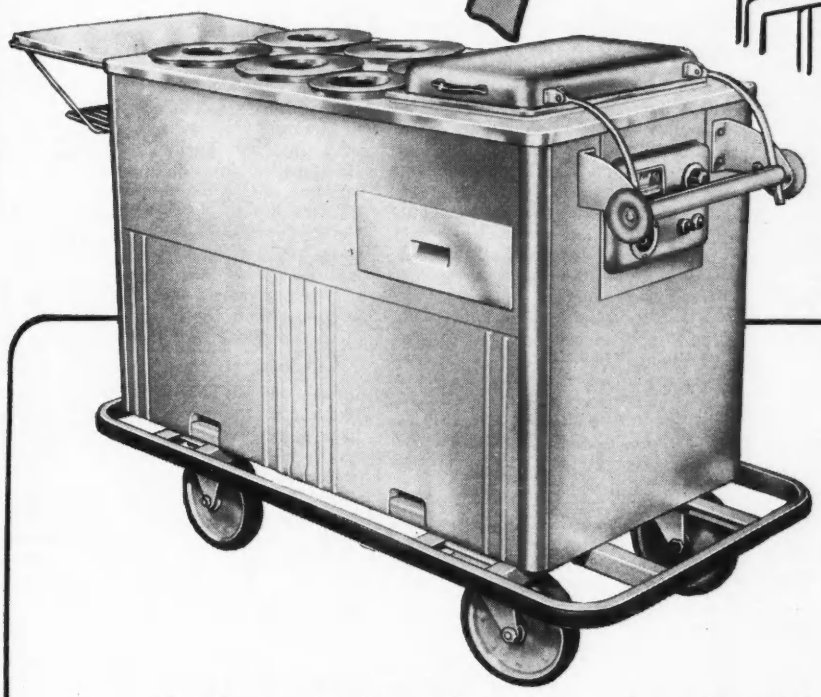
Summers, Evelyn G., R-1254, 1440 Chapin St., N. W., Washington, D. C.

Second Lieutenants

Haas, Marjorie A., R-2520, 912 Chalker St., Akron, Ohio

Saunders, Eleanor M., R-2496, 17 Gates St., South Boston 27, Mass.

IT'S LITTLE THINGS— LIKE A HOT ROLL...



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work closely on all research projects in consultation with the Food and Container Institute of the Armed Forces in Chicago, serving as a clearing-house for policy decisions concerning research required for the benefit of the food and container industry and the armed forces. The Associates will not carry out research directly; research projects will be conducted by the research divisions of the member organizations, by government laboratories, or by universities and technical institutes. Headquarters of the new organization will be in Chicago, and its president will be Dr. B. S. Clark, Director of Research, American Can Company, Maywood, Illinois. Other officers are: Vice-President, T. M. Rector, Vice-President of General Foods Corporation; Treasurer, Victor Conquest, Director of Research, Armour and Company; Secretary, Col. R. A. Isker, U. S. Army retired.

Plentiful Foods. The following foods are expected to be plentiful in July, according to the Production and Marketing Administration of the USDA:

Fresh produce and fruits

Cantaloupes	Potatoes, Irish
Lemons	Tomatoes
Oranges	

Canned foods

Apple juice	Orange juice
Apples	Peanut butter
Applesauce	Peas
Blended orange and grapefruit juice	Potatoes, sweet
	Prunes, fresh (purple plums)
Fruit spreads	Pumpkin
Grapefruit juice	Tomato catsup
Grapefruit segments	Tomato juice
	Tomato paste
Honey	Tomato puree

Dried fruits

Figs	Prunes
Peaches	Raisins

Miscellaneous foods

Eggs
Fish, fresh and frozen

In addition, the following are expected to be *relatively* plentiful in July:

Chickens (broilers and fryers east of the Mississippi)
Peas, frozen

Special sales campaigns are being conducted for two of the plentiful foods listed above. From June 17 to 26, the Department of Agriculture sponsored a promotion campaign for Irish potatoes, for the new 1948 crop is now coming onto the market.

To promote the sale of the large remaining stock of last year's pack of canned peas, a Canned Pea Association has been formed. This organization reports that supplies of both No. 10 cans and smaller consumer size cans are large and are selling at extremely reasonable prices. To help move this supply of last year's crop before the next 1948 pack becomes available, a special advertising campaign is being conducted to reach both consumers and institutional users. The Canned Pea Association also reports that prospects are for a bumper crop of peas this year, and it is consequently expected that the supply of canned peas will remain exceptionally high, even after last year's pack has been used.

News of State Associations

Alabama Dietetic Association. On April 24 the Alabama Dietetic Association held its annual spring meeting at Alabama Polytechnic Institute, Auburn. In the morning, tours of the Animal Research Laboratories and the dormitory food units were enjoyed, after which a luncheon prepared by the home economics students was served. In the afternoon, Alyce Billings Walker, Women's Editor of the Birmingham *News*, talked on "Woman—The Individual and the Group."

At the business meeting which followed Mrs. Walker's talk, it was decided that the Alabama Association would make three annual awards of a year's subscription to this JOURNAL to the most outstanding students in dietetics at Alabama Polytechnic Institute, the University of Alabama, and Alabama College for Women. This year's awards go to: Ann Swindle, Alabama Polytechnic Institute; Katherine Bealle, University of Alabama; and Clarice Collune, Alabama College for Women.

The following officers were elected for the year 1948–49: President-Elect, Lorene Grant Smith, Baptist Hospital, Birmingham; Vice-President, Kathryn Tissue, Alabama Polytechnic Institute, Auburn; and Secretary, Pauline Bright, University of Alabama, Tuscaloosa. The incoming president, elected last year, is Elna Daniels, University of Alabama.

Arkansas Dietetic Association. At the annual meeting of the Arkansas Dietetic Association held in Little Rock on April 12, Dr. Lillian Storms Coover, A.D.A. Secretary, spoke on "Association Affairs." The second speaker on the afternoon program was Dr. Beulah Gillaspie, Head of the Home Economics Department, University of Arkansas. In the evening, the Arkansas dietitians heard Dr. Hayden H. Donahue of the Ft. Roots Veterans Administration Hospital.

At the business meeting, the following officers were elected: President-Elect, Mabel Herendeen, Chief Dietitian, Ft. Roots Veterans Administration Hospital; Secretary, Olive Bost; and Treasurer, Mary Ellen David. Thelma Meharg, Supervisor of the school lunch program in southeast Arkansas, will be president next year.

Colorado Dietetic Association. On May 1, the Colorado Dietetic Association met at the Broadmoor Hotel, Colorado Springs. In the morning the program was devoted to a coffee hour, the business meeting, an address by Gladys E. Hall, A.D.A. Executive Secretary, on "Association Affairs," and a round table discussion. The round table group took up three topics: "Relationship of Food Costs to Expenses in the Pay Cafeteria," "Practical Application of the Low-Sodium and Sodium-Free Diets," and "Type and Amount of Material Given with Instruction to Patients."

The luncheon was a joint meeting with the Colorado Home Economics Association. This was followed by a second joint session in the afternoon. At that time Miss Hall discussed the A.D.A. Vocational Guidance Program. Then a panel discussion on "Food—Our Responsibility" was conducted by Dr. Lloyd Florio, Head Officer, Denver Health Department, who acted as moderator.

Connecticut Dietetic Association. The annual spring meeting of the Connecticut Dietetic Association was held on Wednesday, May 19, 1948, at the St. Francis Hospital, Hartford. Dr. Charles Kaufman of New London, Connecticut, discussed the Kempner rice diet from his own personal experiences. Dr. Louis Nahum of New Haven, talked on low-sodium diets and low-cholesterol diets as used in the treatment of high blood pressure and arteriosclerosis.

Margaret McGovern, Nutritionist with the New York, New Haven and Hartford Railroad, highlighted the plans for the A.D.A. convention, and Dr. Martha Potgieter, State Chairman of the Professional Education Section, spoke on vocational guidance and the materials available.

Tea was served with Josephine Mullholland, Head Dietetian at St. Francis Hospital, acting as hostess.

Delaware Dietetic Association. The speaker for the February meeting of the Delaware Dietetic Association was a local florist who talked on "Economical and Effective Use of Flowers for Home Decoration and Care of Flowers in Hospital Rooms." In March, Dr. R. O. Bausman, Professor of Marketing and Farm Management, University of Delaware, Newark, spoke on the subject "Food and Population." A dinner meeting was held in April at the Hotel DuPont in Wilmington in honor of Henrietta Fleck, Chairman of the Home Economics Department of New York University and charter president of the Delaware Dietetic Association. Her topic was "The Role of the Dietitian in the World Today." Many of Dr. Fleck's former students at the University of Delaware were present. For the May meeting at the Dinner Bell Inn at Dover, Dr. C. P. Knight of the Delaware State Board of Health talked on "The Humorous Side of Medicine."

Maine Dietetic Association. Two successful meetings have been held by the Maine Dietetic Association this year. The first was a luncheon meeting at the Tarratine Club, Bangor, on November 5. At this meeting reports of the A.D.A. Philadelphia meeting were given, after which Marion D. Sweetman, Professor of Home Economics at the University of Maine, spoke on vocational guidance.

The second meeting took place at the Malta House, Augusta, on April 26. Robert Harmon, Chief Food Inspector,

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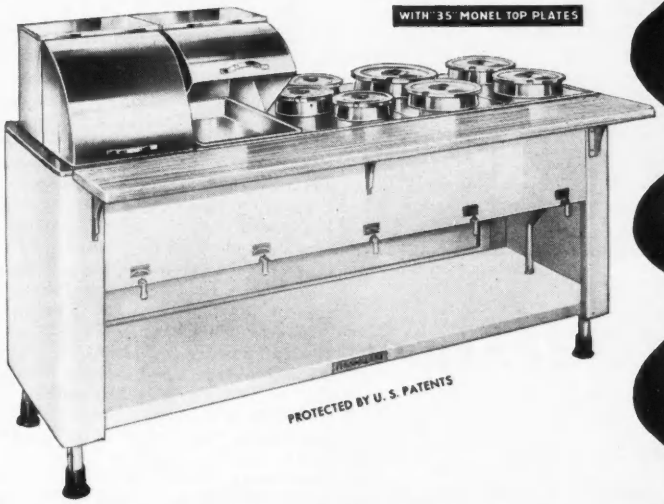

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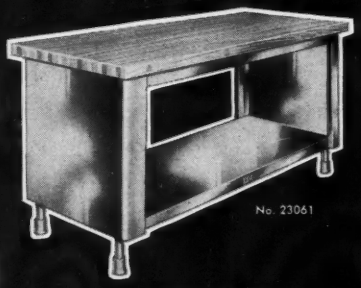
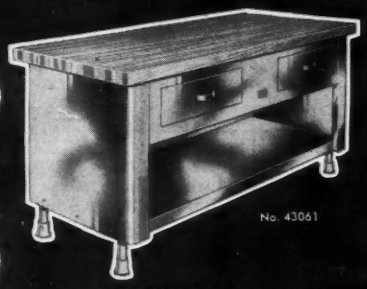
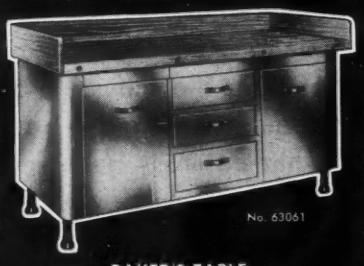


WORK TABLE
Base open on each long side.



COOK'S TABLE
Base open on operator's side only. Two stainless drawers, 19" x 20" x 5"

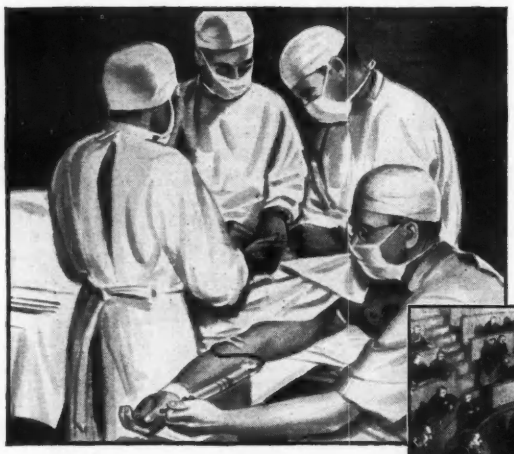


BAKER'S TABLE
Two stainless bins each have a capacity of 150 lbs. of flour. Steel bottom is tight fitting for sanitary purposes. Three stainless drawers, 19" x 20" x 5". 5" Guard on three sides of top.

Maine Department of Health and Welfare, showed a movie on "My Health Is in Your Hand" and spoke on food sanitation.

At this meeting, the Maine Association agreed to serve as co-hostesses for the A.D.A. meeting in Boston in October, and will supply some of the favors for the New England States Luncheon. Flora Harriman, President, tendered her resignation at this meeting, and Isabel Patterson, President-Elect, took over the duties of this office. Other officers elected at this meeting are: President-Elect, Mary Morse, Chief Dietitian, Eastern Maine General Hospital, Bangor; Secretary, Wanda Zendzian, Head Dietitian, Veterans Administration, Togus; and Treasurer, Caroline Yerxa, Home Service Director, Bangor Hydro-Electric Company.

The Maine Dietetic Association this spring is also proud to be able to begin the publication of a state bulletin titled *The Pine Tree State News Letter of the Maine Dietetic Association.* Volume I, Number 1 was a sixteen-page mimeographed release edited by Flora M. Harriman. An interesting feature of this first bulletin is a two-page account of the founding and development of the Maine Dietetic Association.



1948 . . . sodium pentothal being injected into vein of chest case patient prior to operation

1847 . . . ether administered by a sponge soaked with the drug

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Minnesota Dietetic Association. The newly formed Upper Midwest Hospital Conference, which includes Manitoba, Iowa, South Dakota, North Dakota, Montana, and Minnesota, was held in Minneapolis, June 2 to 4. As an allied group, the Minnesota Dietetic Association held its annual meeting on June 2 and the morning of June 3, at which over 100 dietitians were registered.

Margaret Gillam, Dietetics Specialist, American Hospital Association, opened the Thursday morning meeting with a talk on "Organization and Management for Control of Dietary Department." This was followed by a work shop divided into four groups. Leaders and topics of these four discussion groups were:

Eleanor G. Wilson, Assistant Chief Dietitian, Minneapolis, Veterans Administration Hospital—"Food Cost Control."

Miriam E. Lowenberg, Rochester Child Health Project, Mayo Clinic—"Community Nutrition Problems."

Mabel Mathias, Chief Dietitian, Northwestern Hospital, Minneapolis—"Employees Pay Cafeteria."

Sister Rose Alma, Administrative Dietitian, St. Joseph's Hospital, St. Paul—"Training of Employees."

The varied program included many topics of general interest. Dr. W. H. Dankers, Extension Economist in Marketing, Agricultural Extension Division, University of Minnesota, spoke on "The World Food Situation." "New Concepts in Dietary Treatment of Cirrhosis" was presented by Dr. Leslie Zieve, Senior Resident of Medicine of the Minneapolis Veterans Hospital. Clara Brown Arny, Professor of Home Economics Education, University of Minnesota, talked on "Adolescent Food Habits." Arleth Haeberle, Director of Woman's Activities, WTCN Radio Station, chose as her subject, "Where Are the Freshmen?" "Looking Backward and Forward in Health" was discussed by Dr. Stewart C. Thomson, Associate Professor of Public Health, University of Minnesota.

On the afternoon of June 3 all allied hospital groups were asked to attend one of two general sessions. Most of the dietitians attended the session entitled "Hospital Construction," where Miss Gillam gave a paper on "Planning the Dietary Department in Hospital Construction."

On Friday at the general session on public relations, Marjorie Hall Siler represented A.D.A., and spoke on "Practical Suggestions on How the Dietitian Can Build up Good Will."

There were approximately a hundred exhibits, nine of which were educational. The Minnesota Dietetic Association's exhibit depicted the role of a dietitian in a hospital. The various activities of a dietitian were illustrated by silhouettes and lettering in a 6-in., colored, revolving wheel, divided into nine sections. A spotlight flashed onto this colorful wheel of painted plywood. A poster was also displayed on an easel showing the opportunities for a dietitian.

Ruth Nickel, Assistant Director, Department of Nutrition, St. Marys Hospital, Rochester, entertained the di-

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WHEN the cost of living goes up, it carries everything along with it. That's not good for people who buy things—or for those who sell, either. For, when prices are high, fewer can buy.

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Here are some figures which show how milk prices compare with food prices, from 1939 to 1948:

Increase in cost of food 116%
Increase in cost of fluid milk 78%

Notice that milk has not increased nearly so much as the average of other foods. Our profit from all of our milk divisions averaged less than ½ cent per quart of milk sold in 1947—far less than the public thinks business makes—and much less than the average profit in the food industry.

In any food budget, milk—nature's most nearly perfect food—gives you more for your money than anything else you can buy. We see to it that milk, and cheese, butter, ice cream and other products made from milk, are fine and pure. *And we make them available at the lowest possible prices to the largest number of people.*

An impartial national survey shows that most Americans consider 10%-15% on sales a fair profit for business. Compared to this, the average profit in the food industry is less than 5%. And National Dairy's profit in its milk divisions in 1947 was less than 2%.

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NATIONAL DAIRY
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etitians at luncheon on June 2 with her slides and a talk on her recent trip to Europe. "Over the Chop Sticks," was presented by Florence Kerr, Director of Passenger Service, Northwest Airlines, at a luncheon on June 3. At the dinner that evening the guests were entertained by a reading by Barbara Davies Nelson of the comedy, *John Loves Mary*. Many dietitians also enjoyed field trips to Northwestern Hospital and General Mills.

As one of the projects of the Professional Education Section under the chairmanship of Margaret Pewters, three prizes were offered to dietetic interns for feature articles on "Dietetics as a Profession." The prizes were given at the business meeting of the Association to the following:

First prize: Elizabeth M. Peterson, Ancker Hospital, St. Paul.

Second prize: Ruth Bergstrom, St. Marys Hospital, Rochester.

Third prize: Elsie Vargo, St. Marys Hospital, Rochester.

Miss Peterson was awarded a year's membership in the Minnesota Dietetic Association.

The *Rochester Dietetic Association* completed the year's activities with three outstanding meetings. In February, Dr. Howard Odel spoke on "Diet in Cardio-Renal-Vascular Disease." At the next monthly meeting in March, the subject was "Equipment for the Institution" which was presented by Mr. Palmgren of the Aslesen Company and Mr. Foster of the Dishwasher Division of Colt-Patton Firearms Company. In April, Ellen Pennell of Pillsbury Mills Home Service Department presented "New Trends in Food." She covered developments in flour and flour products, frozen foods, and quicker methods of making foods. Jeannette Kelly of General Mills' Betty Crocker staff was also an honored guest. Home economics students of the local high school were invited to attend.

The *Twin City Dietetic Association* in April held a patriotic meeting at Fairview Hospital with speakers from the American Red Cross telling about the "Freedom Train." In May, the National Dairy Council was host to the group at a dinner meeting.

New York State Dietetic Association. On May 13, Nathan Straus-Duparquet, Inc., of New York City held a "Sanitation and Equipment Forum" in its auditorium for the *Greater New York Dietetic Association*. The purpose of the Forum was to discuss up-to-date trends in institutional kitchen planning, and the newer types of labor-saving equipment now available. Mary K. Bloetjes, President of the Greater New York Dietetic Association, assisted in planning the program so that it would include topics of special interest to dietitians. Speakers from other suppliers also participated. The following topics were discussed:

"Trends in Institutional Chinaware" by C. B. Storms, Onondaga Pottery Company.

"Aluminum Cooking Utensils" by T. Lorber, Aluminum Cooking Utensil Company.

"Dry Heat Cooking" by D. J. Brogan, The G. S. Blodgett Company.

"Electro-Cut Food Preparation Machine" by Jack Reiter, Qualheim, Inc.

"Stainless Steel Fabrication"—a slide film presented by J. J. Lennon, Carnegie-Illinois Steel Corporation.

"Proper Dishwashing Procedures" by H. Kleinfeld, New York City Department of Health.

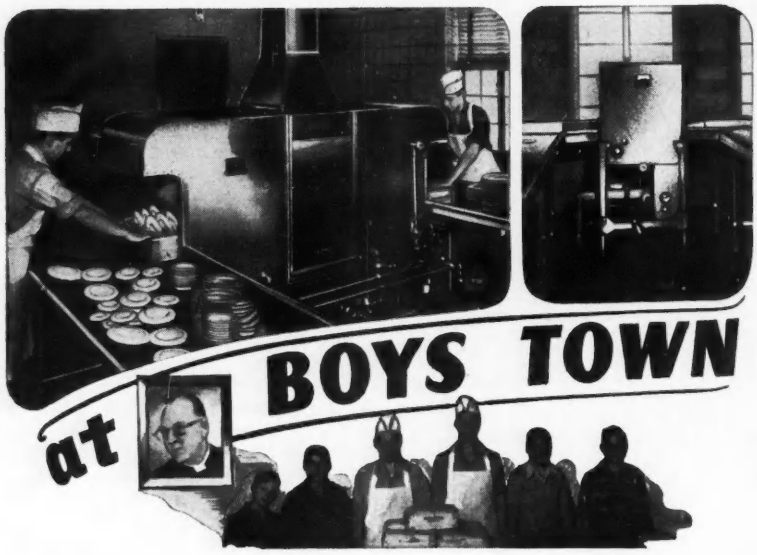
"The Kitchen—Modernization, Planning, and Equipment" by A. J. Amendola, Nathan Straus-Duparquet, Inc.

North Dakota Dietetic Association. At the annual spring meeting held in Fargo on May 3, the North Dakota Dietetic Association elected the following officers for the ensuing year: President, Frances Lindsay; Vice-President, Elvira Smith; Secretary, Patricia Meyer; and Treasurer, Willene Darlington.

Oregon Dietetic Association. Several interesting meetings have been held by the Oregon Dietetic Association this year. In February the Greene Winkler Equipment Company entertained the association, their Mr. Hull speaking on "The Trend and Availability of Equipment." For the March meeting, the Portland Gas Company was host in its

In this 2-tank Champion, dish racks are moved through machine by a simple automatic mechanism.

Another Boys Town dishwashing pantry, with door-type Champion.



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patients can enjoy

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low-salt diets

new and ONLY sodium-free
salt substitute that tastes
exactly like table salt

that makes food taste exactly like
food seasoned with salt...
no bitter, disagreeable taste.

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be used as safely and freely as salt...
at the table, in cooking and baking.
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TOXEMIAS of PREGNANCY

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2. enjoy food and be adequately nourished
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amounts of citric acid and
potassium iodide (iodizing traces)
● Bottles of 2¼ oz.

● send for tasting samples
and just taste it!
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Hospitality House; the program highlighted "Newer Trends in Cooking by Gas." Mary Cullen's Cottage was the scene of the April meeting, at which Dorothy McCullough Lee, mayor-elect of Portland, spoke on "The Role of Women in Government." In May, the Damascus Creamery entertained the group at its new plant. Mrs. B. Stromquist, Home Economist for the company, acted as hostess. A hat show provided the entertainment for the evening.

Vocational guidance has been the keynote of all activities of the Oregon Association throughout the year, and letters and material have been sent to all high schools in the state. Exhibits have been set up to spotlight dietetics in connection with the Red Cross and nurse's recruitment, and booths will be used at the County and State Fair.

Tennessee Dietetic Association. In April, Volume 1, Number 1 of *Volunteer*, the bulletin of the Tennessee Dietetic Association, made its bow. The editing f the bulletin is now being done by members of the Association's executive board in Memphis, but it is hoped that by fall, when the publication is well established, an editor may be appointed. It is mimeographed for the Tennessee Association through the courtesy of the Memphis Dairy Council.

Recently elected officers of the Tennessee Association are: President-Elect, ne L. Carpenter; Vic e -President, Ruth Buckley; and Secretary-Treasurer, Ruth Huenemann.

Utah Dietetic Association. The annual convention of the Utah Dietetic Association was held on April 20 in Salt Lake City. Following registration of twenty-five members at the Hotel Temple Square, the group toured several of the plants which are members of the Utah Poultry and Farmers Cooperative Association. At Carlson Hall, University of Utah, an afternoon business meeting was held, following which Margaret Cowden Bernard, Chief of the Dietetic Section, Branch 13, Veterans Administration, Denver, discussed current administrative problems of the dietitian. A tea, at which Anna Marie Driscoll, Director of Carlson Hall, was hostess, concluded the afternoon meeting.

In the evening a banquet was held at the Coral Room, Hotel Temple Square, speaker for which was Dr. Harold Brown, Senior Medical Resident, Salt Lake Veterans Administration Hospital. His subject was "The Importance of Nutrition to the Internist" in which he emphasized the newer trends in diet therapy for the diabetic, cardiac, cirrhotic, and nephritic patient.

On May 19, at the regular monthly meeting held at the Utah Power and Light Company, Salt Lake City, Evelyn Hansen, Home Economist for the company, demonstrated the preparation of baked products for quick freezing.

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Potato Flour
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C-D
RYE FLOUR
C-D
RICE FLOUR
C-D FLOURS
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Barley, Corn, Rice, Potato, Rye, Soy Bean and others. Pure flours containing no wheat or other offending allergens, because they are milled where no wheat is handled.
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Association Activities

Labor Department to Conduct Socio-Economic Study on Dietitians. The socio-economic survey conducted by the American Dietetic Association last year and summarized in the *Annual Reports and Proceedings* of the Association (1946–47) provided valuable data on salaries, working hours, and other details about the profession. Realizing the need for additional and up-to-date information about the socio-economic status of dietitians, the Executive Board requested that a survey be conducted by the U. S. Department of Labor, Bureau of Labor Statistics. Ewan Clague, Commissioner of Labor Statistics, has informed the Association that when appropriations for the coming fiscal year were passed last month, provision was made for the conducting of such a survey on dietitians in 1949. The survey will be similar to that conducted by the Bureau of Labor Statistics for the National Nursing Council, results of which were reported in the *American Journal of Nursing* in the July, September, and October 1947 issues. The survey on dietitians will probably be conducted early in 1949, and already a tentative questionnaire has been prepared. Members of the Association are urged to cooperate when they are asked to participate in this study. Further details about the survey will be outlined at the A.D.A. Annual Meeting in Boston, October 18 to 22.

New Bulletins on Dietitians. Members of the Association will be pleased to know that a valuable addition to our vocational guidance references will be made soon. The Women's Bureau of the U. S. Department of Labor is making plans for a new bulletin on *Employment Opportunities for Women in Dietetics.* Many A.D.A. members are familiar with a series of pamphlets prepared by the Women's Bureau on *The Outlook for Women in Occupations in the Medical Services.* The new pamphlet will cover the same general topics, but will include information on employment in all types of positions held by dietitians. Although the bulletin will not be available until the spring or summer of 1949, the tentative outline for the study has been prepared and work is well under way. This announcement is especially gratifying since the national office has worked toward this end for several years, and the Association is fortunate to have the cooperation of the Women's Bureau in this project. The work is being done under the direction of Marguerite W. Zapoleon, Chief, Employment Opportunities Branch, Women's Bureau, U. S. Department of Labor.

Dietitians and Government Publications. The U. S. Civil Service Commission has revised the class specifications for dietitians. The Dietitian Series, P-625-0, in its new form published in May, 1947, is comprehensive and well written. It describes the work and qualifications of dietitians in the various phases of dietetics as found in govern-

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ment hospitals. This publication may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for the price of $1.00.

Another publication in the process of revision is the *Dictionary of Occupational Titles*, prepared by the U. S. Employment Service of the Department of Labor. In the new edition, now on the press, will be found a revised definition of *dietitian* which is the result of the cooperative effort of the A.D.A. Executive Board and the U. S. Employment Service.

Contributions by State Associations to Public Relations Fund. At the spring meeting of the *Illinois Dietetic Association* held in Chicago on May 7, it was voted to send to the headquarters office of the A.D.A. $500 for the purpose of helping to defray part of the expenses of the public relations program on which the national Association is now embarked.

When the *Iowa Dietetic Association* met in May its members also decided to take from its treasury money for a contribution to the A.D.A. public relations program. Fifty dollars has now been received in the headquarters office from Iowa.

Later in the month, when the *New York Dietetic Association* met at Lake Placid on May 26 to 28, a motion was made and passed that $1000 be sent to the A.D.A. to help meet the costs of conducting the public relations program for dietitians.

The Executive Board of the Association is increasingly gratified at the way in which local and state associations have voluntarily offered help in meeting this new and unusual expense of the national Association and is deeply appreciative of the spirit of cooperation such contributions represent.

Additions to Loan Fund. The headquarters office of A.D.A. recently received two gifts of money to be added to the A.D.A. Loan Fund for Graduate Study. One—for $200—was sent by the Pennsylvania Dietetic Association; the other, a $100 contribution, came from the Pittsburgh Dietetic Association. Any A.D.A. member of at least two years' standing who wishes to pursue graduate study is eligible to make application for a loan from this fund. Regulations and policies concerning loans were published on page 1062 of the December, 1947, issue of the JOURNAL

***Glamour* Magazine Spotlights Dietitians.** On page 110 of the June issue of *Glamour* Magazine appears a short but eye-catching sketch about the dietitian. Called "Job Idea: Dietitian," it presents the work, training, personal assets, and remuneration of women in this profession. Already a number of inquiries have been received by the A.D.A. office from high school, college, and business girls who have read the article.

Publicity Idea. Dietetics as a profession was presented to the citizens of Cleveland, Ohio, during Cleveland Dietitians Week, May 16–23. One method of placing the dietitian in the public eye was the use of table placards or "tents" in several of the restaurants. Approximately 400 placards were distributed, which read as follows.

CHOOSE DIETETICS

A Growing Profession
THERE ARE OPPORTUNITIES
IN HOSPITALS, RESTAURANTS,
INDUSTRY, SCHOOLS AND
PUBLIC HEALTH NUTRITION

Aid to Vocational Guidance. Alice Smith, nutritionist with the Bureau of Maternal and Child Health, Michigan Department of Health, has made a contribution to the A.D.A. vocational guidance program. In the April issue of the *Nutrition News* of the Michigan Department of Health, Mrs. Smith included an article on the training of dietetic interns at University Hospital in Ann Arbor and gave suggestions as to the various sources of information on the profession of dietetics.

Aid to Foreign Libraries. Mildred Bonnell, Chairman of Project III of the Professional Education Section, "Assistance to Libraries in Needy Countries," has issued an appeal for further cooperation with this project on the part of state and local associations. Typical of the appeals received are the following. From China: "Nutrition is new in China. It needs our energetic pushing. We have opened a nutrition clinic for babies. It is important to have up-to-date information, but it is difficult for us to get it. I am sure you can help us." From Greece: "We are badly in need of books for college teaching—have had nothing new for six years." From France: "We had three schools completely destroyed, but most lost their materials."

Already a number of state and local associations have joined the work of Project III, but there are many more addresses for needy libraries than there are sponsors to help them. For instance, from the Scientific Library of the Philippines has come a special appeal for Volumes 1 through 16 of this JOURNAL. The following reports from those associations which have already sent material to foreign libraries indicate what can and is being done.

South Texas Dietetic Association: "We are very interested in our Marocopios School in Athens, Greece, and are sending as much help to them as possible. To date we have sent four boxes, with as much material left over for that and more! We'll pack boxes at our next meeting."

Connecticut Dietetic Association: "Our Association will be glad to adopt the library project for the University of the Philippines."

Greater New York Dietetic Association has sent books and magazines to fifteen addresses in Norway, Sweden, and Denmark.

Kansas City Dietetic Association has written to Chungking to Miss Wu Sung Chen to learn what their needs are.

Mississippi Dietetic Association: "Our first shipment will go to Greece. We have also agreed to furnish a full scholarship to a student from Greece who will study at the University of Mississippi."

This is the procedure to follow in adopting a foreign protégé:

(a) Write to Mildred Bonnell, Raitt Hall, University of Washington, Seattle, requesting the address of a protégé.
(b) Before sending materials, write to your protégé for correct information regarding particular needs.
(c) Mail printed material according to the following post office regulations:
  (1) Wrap package well, tie securely with cord on six sides, do not seal.
  (2) Mark package "Printed Matter."
  (3) Check with post office regarding limitation on weight of package to the recipient country. They differ.
  (4) Mail with correct postage. Rates are 1½ cents per 2 oz. of weight.

News of Advertisers

Armour and Company, through its Consumer Service Department, is constantly adding to its list of publications prepared to help persons concerned with large quantity food preparation and home economics teachers. Special saddle-stitched packets containing large quantity recipes for quick frozen variety meats and for lamb are now available, and one on veal will soon be distributed. These packets are bound as saddle-stitched 6 by 4¼ in. booklets, and the recipes are printed in such a way that the institutional user may cut on a dotted line and obtain cards for her 4 by 6 file box. The larger booklet, titled *Armour Meats for Quality Cookery Buying Guides and Recipes*, is now in the process of revision. New additions to Armour's "Study Guide" Series cover pastry-making, sausage and ready-to-serve meats, pork, ham and bacon, lamb, and beef.

From *S. Blickman, Inc.*, comes word that popular-priced standard steam tables for gas or electric heat are now being mass produced and are available in twelve models. The tops and covers of these units are made of stainless steel. They are braced underneath, and have reinforced openings. Other features include: seamless, crevice-free surfaces; hardwood carving board mounted on solid metal brackets; built-in electric heating units. A galvanized steel plate shelf beneath the carving board is available as extra equipment for all models, thus providing extra storage space for dishes at a convenient working height. Blickman has also issued recently a catalog on its "Value Line" of round-corner stainless steel sinks, which were described in the June issue of the JOURNAL.